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Agricultural Markets in Benin and Malawi

The Operation and Performance of Traders

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Surveys of the operation of agricultural traders in two Sub-Saharan African countries suggest that their performance would benefit from policies aimed at increasing their asset base, reducing transaction risk, promoting more sophisticated business practices, and reducing physical marketing costs.

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Summary findings

Drawing on original surveys of agricultural traders, Fafchamps and Gabre-Madhin examine how traders operate in two Sub-Saharan African countries, Benin and Malawi. They find the following:

- The largest transaction costs for traders are search and transport. Search methods rely principally on personal visits by the trader, which raises search costs. And since enterprises are very small, transport represents a large share of marketing costs.
- Brand recognition, grading, and quality certification are nonexistent.
- Brokers and agents are not organized in commodity exchanges.
- Quantities are not pooled for transport and storage so as to achieve returns to scale.
- Interseasonal and interregional arbitrage is not feasible for most traders, who prefer to operate day to day in a small territory.

This information provides some important insights into how agricultural trade could be improved. It suggests possible policy interventions in four main areas: increasing traders' asset base, reducing transaction risk, promoting more sophisticated business practices, and reducing physical marketing costs.

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Agricultural Markets in Benin and Malawi: Operation and Performance of Traders

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1. Introduction

A large number of studies have addressed the question of market integration in the post-market reform era in sub-Saharan Africa (Badiane and Shively, 1998; Dercon, 1995; Negassa and Jayne, 1999). These studies rely primarily on the analysis of price co-movements at the market level. While this type of analysis is highly informative in providing snapshot evidence of market segmentation or lack of price transmission at a given point in time, it does not provide significant insights on why markets are poorly integrated or what constraints are faced by market actors. Relatively few studies have addressed the microeconomic behavior of market participants, such as individual traders or firms (Bryceson, 1993; Barrett, 1997; Gabre-Madhin, 1998; Fafchamps and Minten, 1999). These studies highlight the importance of transaction costs facing individual traders, the role of intermediaries, and of relationships and social capital. Even fewer studies have attempted to link trader characteristics and market behavior with standards of market performance at the trader level.

The present paper fills this gap by documenting traders' assets, their trading practices and commercial activities, and their capacity to undertake spatial and temporal arbitrage. This paper presents original evidence for Benin and Malawi on how traders' assets, including financial, physical, human, and social capital, influence their commercial activities and, ultimately, their arbitrage behavior. An enduring puzzle in the market literature in sub-Saharan Africa is why marketing margins remain high despite reforms and the relative lack of sophistication of liberalized markets (Beynon et al., 1992; Jayne and Jones, 1997).

The approach taken in this paper is to empirically investigate traders' assets and trading practices and link these not only to evidence on traders' gross margins but also to their net margins using detailed data on marketing, operating, and transaction costs. This approach is important for a number of reasons. First, despite reforms, traders in liberalized markets across sub-Saharan Africa continue to operate in an environment of suspicion, viewed by policymakers and laypersons alike as alike as speculative, usurious, or benefiting from excessive profits. Second, an emerging conclusion of the post-reform era is that market liberalization is necessary but not sufficient to bring about efficient markets. Thus, a closer look at the individual determinants of performance is warranted. Finally, in the wake of reforms, it remains unclear

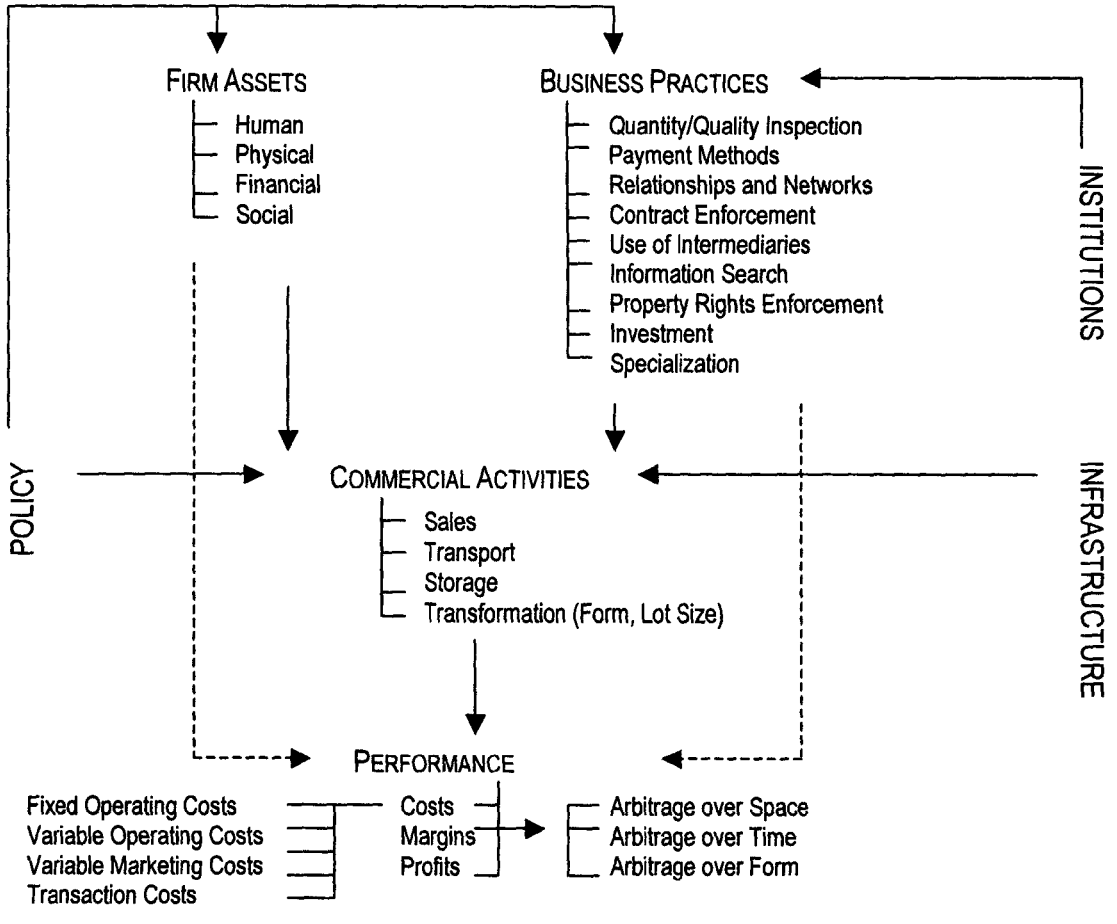
what is the appropriate role of the public sector. Again, understanding the source of the constrained behavior of market participant can serve to highlight areas of where intervention can have an impact, in terms of policy as well as infrastructure and institutions.

This paper is based on the conceptual framework presented in Figure 1. In this framework, policy, institutions, infrastructure are exogenous to the behavior of traders in the market. Thus, policies that limit, regulate, or promote private sector market participation will influence traders' access to and accumulation of assets as well as their business practices, and their commercial activities. Assets, which are specific to individual trading firms, include human resources, physical capital in the form of buildings and equipment, financial assets, and social capital. Trading practices include traders' inspection of goods, methods of payments, their reliance on networks, their use of intermediaries such as agents and brokers, their contractual performance, their search behavior, their enforcement of property rights, and their investment and specialization in agricultural trade. Assets and business practices are also influenced by the existence or lack of formal market institutions such as commercial law and dispute settlement mechanisms, inspection services, referral agencies, trade associations, and information systems. Both assets and practices along with infrastructure, such as roads, vehicle fleets, communications, and public storage facilities, directly influence the extent of traders' commercial activities, viewed in the terms of purchases and sales, as well as their transport, storage, and transformation of agricultural products. Finally, the analysis considers the links between traders' assets and practices as well as their commercial activities on how efficient their market activities are, viewed in terms of the relationship between the costs faced by individual traders and their margins. This broad framework enables the analysis of whether better-endowed traders are more or less efficient, whether larger firms in terms of scale or scope of activities influence efficiency, and the impact of trading practices on commercial behavior, among other possible experiments.

In addition, the paper takes a comparative focus on trader performance between Benin and Malawi, which adds a rich dimension to the analysis. Benin, in francophone West Africa, represents an environment in which private market activity has a long history and in which government intervention has traditionally been limited, with the exception of cotton (Kherallah et al., 2000). In sharp contrast, Malawi, along with

others in Eastern and Southern Africa, has had, up to recently, extensive state intervention in marketing and protection of smallholders (Jayne and Jones, 1997). Thus, the comparative focus provides insights on the role of history and tradition in shaping trading norms and in asset accumulation.

Figure 1 The Operation of Traders in the Market



2. Survey Methodology

2.1 Target Population

In both Benin and Malawi, the survey of traders targeted input traders, food crop traders, and cash crop traders at both the wholesaler and retailer level. In addition, a market-level survey was conducted in order to obtain information on the marketing environment for each of the selected markets in which trader surveys were conducted.

In both countries, food crop traders are primarily independent traders working on their own account, who could be identified by their location in the market. With the exception of cotton, this is also true for cash crop traders in Benin, who often trade in both food and cash crops such as pineapples. However, in Malawi, in the case of tobacco trading, field observations revealed a similar structure of traders operating as agents on behalf of very large tobacco traders. Conversely to the trade of inputs, these traders acted as buying agents, thus buying tobacco from farmers on the account of a large company and delivering the purchased tobacco to the auction floor. Thus, in the case of cash crop trading in Malawi, the survey targeted these buying agents.

2.2 Survey Site Selection and Sampling Frame

The survey sites for the trader surveys in both countries are market towns in which a good sample of agricultural traders existed. These market towns were selected on the basis of their importance in the agricultural economy of the country, in terms of flows and volumes of the three types of products: major food crops, cash crops, and agricultural inputs. An additional criterion used to select survey sites was the availability of secondary price data for the market towns. According to these criteria, 24 markets were identified in Benin and 40 markets were identified in Malawi (see Table 1).

In both Benin and Malawi, a sample population of 800 retail and wholesale traders was targeted, broken down into 200 input traders, 200 cash traders, and 400 food crop traders. Due to the absence of reliable census information on the population of traders in both countries, the first step in drawing a random

sample was to conduct a census of traders in the selected markets. In Benin, this task proved extremely difficult given the very large number of retailers in the major markets and the mobility of traders between market days. Thus, the process followed in Benin to conduct a census of traders was to obtain lists of traders from ONASA (Office National d'Appui à la Sécurité Alimentaire), and the regional bureaus of Ministry of Commerce. In addition to these lists, the survey team undertook a count of traders present on the market day, and used these three sources of information to construct a census from which a sample was randomly draw, resulting in a total sample of 663 food crop and cash crop traders.

In Malawi, a reconnaissance survey of traders was conducted in July-August 1999 in order to count and identify traders according to their status (independent, buying agent, or selling agent), their level (retail or wholesale), and the types of products they traded. The information on the name, type, and location of traders from the reconnaissance survey were entered into a spreadsheet and the sample was drawn randomly from the census data using a computer algorithm. Thus, for the three types of products, a total sample of 738 traders was interviewed in Malawi. Thus, for both countries, the total sample of independent traders is 1371.

2.3 Survey Instrument

Initially, a questionnaire was designed for independent agricultural traders in both countries. During the course of field visits, the questionnaire was tailored to the specific market conditions of each country, while at the same time maintaining the same structure and format across the two countries. The coverage of the survey instrument is not only very broad, but also innovative in the type of information gathered. Thus, the trader questionnaire covered the following main areas: (a) defining the trading enterprise; (b) trader characteristics; (c) factors of productions and operating costs; (d) trading activities and marketing costs; (e) relationships and coordination costs. One innovation in the survey instrument is that, in addition to annually constructing volumes of sales, purchases, and storage, the questionnaire also addresses specific arbitrage behavior on the last completed wholesale transaction. Moreover, in contrast to typical market surveys which focus on trading activities and business assets, data were collected on search behavior and

costs, quality inspection, contract enforcement and dispute settlement, information, and property rights enforcement. Obtaining this type of data, which are generally more sensitive and culture-specific, involved considerable dialogue with the survey team and focused training.

Table 1. Survey Sites and Sample Population

	Benin			Malawi				
Department	Market	Sample	Region	Market	Sample	Region	Market	Sample
Atacora	Djougou	30	**South**	Balaka	16	**Central**	Nkhotakota	2
	Kassouallah	20		Liwonde	20		Salima	16
	Natitingou	15		Ntaja	9		Dowa	3
	Tanguieta	10		Mangochi	29		Mponela	20
	Pehunco	20		Monkey Bay	4		Ntchisi	14
Atlantique	Cotonou	100		Chiponde	34		Kasungu	3
	Sekou	10		Jali	21		Mchinji	2
Borgou	Parakou	65		Limbe	31		Lilongwe	24
	Malanville	30		Lunzu	63		Msundwe	26
	Nikki	36		Mwanza	6		Mitundu	50
	Banikouara	20		Nsanje	24		Chimbiya	8
	Gamia	15		Balunga	9		Njonja	20
Mono	Azove	45		Nchalo	12		Thete	13
	Come	20		Thyolo	19			
Oueme	Ketou	41		Luchenza	19	**North**	Lizulu	36
	Pobe	40		Muloza	28		Ntcheu	22
	Azowilisse	10		Chiringa	17		Chitipa	20
	Ouando	36		Phalombe	11		Karonga	13
Zou	Bohicon	55					Rumphi	7
	Glazoue	30					Mzuzu	45
	Ouesse	15					Mzimba	5
	No. Markets	21		No. Markets				40
	No. Traders	663		No. Traders				738

3. Business Assets

3.1 Financial Resources

Working Capital. The money traders use to purchase agricultural products and pay marketing costs, their working capital, is fairly large by the standards of the countries concerned: $1470 in Benin, $560 in Malawi. This is equivalent to two or three times the annual GDP per capita. The median is much smaller, at $333 and $136, respectively. We see that, contrary to expectations, working capital is 2 to 3 three times larger in Benin than in Malawi: if profits are larger in Malawi, it is not because Malawian traders use more finance. The majority of respondents report augmenting their working capital relative to the previous year.

Table 2. Working Capital of Traders in Benin and Malawi (US $)[a]

	Benin						
	Mean	S.d.	Min.	Max.	Median	N	% 0
Startup capital	166	926	0	20000	50	637	3.0%
Current capital	1471	9341	0	216667	333	655	2.3%
Capital last year	1168	7028	0	166667	267	620	1.9%
Own capital	963	3099	0	53333	281	654	5.0%
	Malawi						
	Mean	S.d.	Min.	Max.	Median	N	% 0
Startup capital	80	342	0	4773	11	738	0.0%
Current capital	560	1965	2	34091	136	738	0.0%
Capital last year	425	1351	0	22727	91	725	0.3%
Own capital	548	1729	0	25000	136	738	0.7%

[a] At the time of survey, exchange rates used are 1 US $= CFA 600 and 1 US $ = MK 45.

Credit. Most working capital comes from internal sources. External finance is extremely limited. Current dues to lenders are but a tiny fraction of working capital. Although one fifth to one third of respondents have a bank account, only a tiny fraction of them has an overdraft facility. Surprisingly, those with an overdraft facility do not appear to make use of it—perhaps because the interest rate is high.

Loans from financial institutions are rare and heavily concentrated on a small number of large traders. In Malawi, most formal loans come from a parastatal. The only source of external finance that is used by a sizeable proportion of respondents is loans from friends and relatives – 8% of the sample in Benin, 21% in Malawi. But these loans are for relatively small amounts: $947 on average in Benin, $55 in Malawi.

A large proportion of surveyed traders (50% in Benin, 75% in Malawi) know a friend or relative they could borrow from. The amount involved is moderate -- $250 to $300 -- and the average duration of the loan limited to 3 months. Regarding alternative savings instrument, 70% of Benin traders are member of a rotating saving and credit association (ROSCA) vs. only 2% in Malawi. Supplier credit is a much more frequent form of credit. We revisit this issue when we discuss relationships with suppliers and clients.

Table 3. Formal and Informal Credit in Benin and Malawi

	Benin							Malawi						
	Mean	S.d.	Min.	Max.	Median	N	% 0	Mean	S.d.	Min.	Max.	Median	N	% 0
Actual Credit by Source [a]														
Financial institution	116	539	0	8333	0	659	86.9%	5	42	0	682	0	728	97.8%
Parastatal	not applicable							16	140	0	2273	0	727	96.1%
Alternative credit institution	4	47	0	833	0	659	99.1%	6	52	0	750	0	728	96.2%
Moneylender	4	68	0	1667	0	659	99.4%	19	425	0	11364	0	727	97.0%
Friend or relative	79	1014	0	25000	0	661	91.7%	12	57	0	795	0	727	79.0%
Other source	10	211	0	5333	0	656	99.4%	0	13	0	341	0	725	99.9%
Banking														
% Traders with bank account	35%	0	0	1	0	661	428	22%	0	0	1	0	735	570
% Traders with overdraft facility	2%	0	0	1	0	649	636	1%	0	0	1	0	729	723
Maximum overdraft [a]	138	1646	0	33333	0	655	98.3%	6	78	0	1136	0	729	99.0%
Maximum used [a]	5	131	0	3333	0	649	99.8%	4	56	0	1136	0	728	99.3%
Interest rate	not applicable						0	21	25	0	65	2	11	5
Access to Informal Credit														
Potential lenders	1.3	2.2	0	20	1	659	329	1.9	2.0	0	20	2	738	184
Maximum could borrow [a]	254	1122	0	16667	0	659	333	318	1335	0	18182	45	738	184
Days could keep loan	91	1171	0	30000	0	659	350	88	142	0	1460	30	738	185
% Traders member of ROSCA	70%	0	0	1	1	661	200	2%	0	0	1	0	721	709
Amount withdrawn [a]	206	684	0	13333	50	659	238	2	22	0	341	0	720	712

[a] US$ equivalent. At the time of survey, exchange rates used are 1 US $= CFA 600 and 1 US $ = MK 45.

3.2 Physical Capital

In terms of equipment, surveyed traders appear surprisingly unequipped. The overwhelming majority of them do not own (serious) weighting equipment, transportation, or storage facilities. Only 3% of the total sample has a telephone. In terms of value, vehicles are clearly the most important equipment item. But ownership of vehicles is heavily concentrated, with a large proportion of surveyed traders without vehicles -- 85% and 94% in Benin and Malawi, respectively. The total value of vehicles is about 9 times higher in Benin than Malawi. Contrary to working capital where we see evidence of increase over time, equipment appears very stable, with virtually no change relative to the previous year—a 6% increase only in the total number of vehicles, compared to a reported 29% increase in total working capital.

In terms of buildings, 59% of Benin traders and 35% of Malawian traders buy and sell from their residence. Half of them store at their residence as well. In terms of wealth, one a quarter of Benin respondents own their home, vs. three quarters of Malawian respondents. At $13,700, the value of a Benin home, however, is about 12 times higher on average than a Malawian home (t value of 6.81) -- which may explain why fewer Benin respondents can afford a home. Higher population density and level of urbanization probably account for the difference in property values.

In terms of storage outside of their own residence, 24% and 39% of Benin and Malawian traders, respectively, store in a dedicated facility outside their home—either owned or rented from someone else. The combined storage capacity of exclusive use facilities is on average 7 metric tons in Benin and 12 metric tons in Malawi (median of 1.4 tons in both countries). Half of Benin's traders and one third of Malawian traders also have access to a collective storage facility, usually located at or around the market. The cost of storage in these facilities is about 25 cents per day per ton in Benin and 3 in Malawi, which seems high.

Table 4. Physical Capital and Investment by Traders in Benin and Malawi

	Benin				Malawi			
% Traders who own:	Mean	S.d.	Median	N	Mean	S.d.	Median	N
Scales	8%	0	0	663	29%	0	0	738
Processing equipment	6%	0	0	663	1%	0	0	738
Non-motorized transport	13%	0	0	663	58%	0	1	738
Motorized transport	15%	0	0	663	6%	0	0	738
Shop and storage facility	10%	0	0	663	11%	0	0	738
Telephone	4%	0	0	663	1%	0	0	737
Average number by trader:								
Scales	0.13	0.52	0	663	0.51	1.71	0	736
Processing equipment	0.11	0.58	0	663	0.01	0.18	0	738
Non-motorized transport	0.20	0.57	0	663	0.82	0.96	1	737
Motorized transport	0.32	1.04	0	663	0.08	0.39	0	738
Shop and storage facility	0.13	0.44	0	661	0.13	0.37	0	738
Telephone	0.03	0.18	0	657	0.01	0.12	0	737
Average number a year ago:								
Scales	0.13	0.52	0	663	0.47	1.68	0	738
Processing equipment	0.11	0.59	0	663	0.01	0.18	0	738
Non-motorized transport	0.19	0.56	0	663	0.78	0.93	1	738
Motorized transport	0.30	1.02	0	663	0.07	0.38	0	738
Shop and storage facility	0.12	0.43	0	663	0.12	0.36	0	738
Telephone	0.03	0.18	0	663	0.01	0.12	0	738
Current value of: [a]								
Scales	61	305	0	661	46	249	0	736
Processing equipment	32	281	0	663	64	1274	0	738
Non-motorized transport	21	83	0	659	34	57	23	736
Motorized transport	3277	24603	0	657	357	3224	0	738
Shop and storage facility	106	723	0	648	188	1174	0	737
Value a year ago: [a]								
Scales	61	304	0	663	39	186	0	736
Processing equipment	33	281	0	663	16	218	0	738
Non-motorized transport	20	82	0	663	35	112	20	737

[a] US$ equivalent. At the time of survey, exchange rates used are 1 US $= CFA 600 and 1 US $ = MK 45.

3.3 Human capital and resources

Education and Experience. Two thirds of surveyed Benin traders have no education as opposed to only 10% of Malawian traders. Half of the respondents have worked in another business before initiating the current enterprise. Benin traders are more experienced than their Malawian counterparts with about twice the number of years of experience both in the current enterprise and in a previous business. Benin traders are also much more likely to have worked in their parents' business (67% of those with previous business experience) than Malawian traders (4%). Malawian traders acquired prior experience nearly exclusively through another business of their own. Another difference between the two countries is that one sixth of Benin traders have worked as an agent prior to initiating their current trade operation, vs. only 3% in Malawi.

With respect to the last occupation prior to becoming involved with agricultural trade, in both countries one third of traders previously worked in agriculture or food processing, one third in trade, and one third in other occupations. Previous trade experience is nearly always in non-agricultural trade in the case of Malawi, against one third of respondents with previous trade experience in Benin. Malawi traders are also more likely to have been wage workers or students prior to entering agricultural trade. Malawi traders arrive to agricultural trade from quite a different starting point. This possibly reflects the impact of trade liberalization.

Table 5. Human Capital of Traders in Benin and Malawi

	Benin	Malawi
Education (% of traders)		
Trader- no education/ illiterate	68.08	9.90
Mother – no education/illiterate	97.71	26.70
Father- no education/illiterate	90.40	53.20
Marital status (% of traders)		
Married	89.26	82.20
Single	3.78	7.50
Divorced	1.82	5.00
Widow/er	5.14	5.30
Traders' Age		
Mean (S.d)	40.71(10.52)	33.44 (9.16)
N	660	738
Number of languages spoken		
Mean (S.d)	2.65 (1.39)	2.14 (1.15)
N	661	738
Past primary occupation (% traders)		
Agriculture/fishery/livestock	18.94	27.60
Agricultural trade	23.33	2.20
Non-agricultural trade	11.97	30.10
Wage/civil servant	1.36	13.70
Student	7.88	12.20
None/housework	13.03	8.50

Employees. Apart from the trader himself or herself, surveyed enterprises do not employ abundant manpower. The average total manpower of surveyed firms is 2.2 individuals in Benin and 1.5 in Malawi. Most employees are family workers. Non-family employees only amount to 0.4 to 0.5 persons on average. Employment levels also appear extremely stable, with no perceptible trend in employment levels.

Wages paid are very low. A large proportion of family workers receive no wage—around 70% in Benin, 40% in Malawi. Non-family workers nearly always receive a wage. Cases when they do not receive a wage probably correspond to apprenticeship contracts. For those non-family workers who receive a wage, the remuneration level is around $7 per month in Benin and $27 in Malawi. The large discrepancy in wage levels may be due to the presence of a small number of large, formal employers in Malawi. Contrary to

micro-enterprises where wages are notoriously low, large African employers pay higher wages (Mazumdar and Mazaheri 1998, Velenchik 1997).

Trading enterprises are not very centralized. In addition to the owner, 1.1 persons on average are authorized to buy for the firm in Benin, and 0.6 persons in Malawi. Similar though slightly lower numbers are reported for those authorized to sell for the firm. Surveyed trading firms operate an average of 4.7 days a week in Benin, vs. 6.1 days a week in Malawi.

On average, the owner is absent for 12 days a year in Benin, and 46 days in Malawi. Absences are mostly motivated by the need for the trader to visit distant purchase and sales market. In most cases, the firm continues to operate in the trader's absence. In the absence of the trader, the business is normally run by an employee of the firm, preferably a relative, in 45% of the cases in Benin and 17% in Malawi. It is also very common for the trader to rely on someone external to the firm—either a friend or a relative—to look after the business in his or her absence. This occurs in 48% of the cases in Benin and 64% of the cases in Malawi. If such a person cannot be found, the business closes.

Table 6. Human Resources of Trading Enterprises in Benin and Malawi

	Benin							Malawi						
	Mean	S.d.	Min	Max	Median	N	% 0	Mean	S.d.	Min	Max	Median	N	% 0
Number of people involved:														
Owner	1.2	2.7	0	50	1	663	1	1.0	0.1	1	2	1	736	0
Family employees	0.8	1.9	0	30	0	663	405	0.2	0.6	0	7	0	731	636
Non-family employees	0.4	1.2	0	13	0	663	581	0.5	1.7	0	20	0	732	590
Total manpower	2.2	3.7	0	67	1	655	1	1.5	1.3	0	22	1	729	0
Total months worked:														
Owner	13.7	30.0	0	500	12	660	2	12.1	1.8	0	24	12	736	1
Family employees	8.7	20.6	0	300	0	659	405	1.9	6.4	0	84	0	731	636
Non-family employees	3.9	13.5	0	120	0	662	580	3.9	12.8	0	216	0	733	591
Number of people a year ago:														
Owner	1.3	2.9	1	50	1	661	0	1.1	0.9	0	12	1	732	6
Family employees	0.7	1.3	0	14	0	659	405	0.2	0.8	0	12	0	730	641
Non-family employees	0.4	1.3	0	13	0	663	579	0.5	2.0	0	30	0	733	597
Wages:[a]														
Monthly wage -family empl.	5.3	32.8	0	507	0	254	175	12.2	17.4	0	91	8	95	37
Monthly wage-non-family empl.	5.1	14.5	0	71	0	53	15	26.5	148.3	1	1728	10	139	0
Annual wage bill - family employees	34	287	0	6083	0	659	580	27	149	0	1773	0	731	673
Annual wage bill -non-family empl.	15	215	0	5069	0	633	595	84	820	0	20739	0	730	590
Total annual wage bill	51	390	0	6083	0	629	524	111	853	0	20739	0	726	554
Delegation														
Number authorized to sell (other than owner)	1.1	1	0	11	1	661	275	0.6	1	0	4	0	738	385
Number authorized to buy (other than owner)	0.8	2	0	13	0	660	412	0.5	1	0	8	0	738	489
Days per week in operation	4.7	2.4	1	7	6	649	0	6.1	1.2	2	7	6	736	0
Days owner is absent per yr.	12.4	15.6	0	120	12	643	276	45.5	45.3	0	312	36	737	129
Operates in owner's absence (%)	71%	0	0	1	1	653	189	55%	0	0	1	1	702	317

[a] US$ equivalent. At the time of survey, exchange rates used are 1 US $= CFA 600 and 1 US $ = MK 45.

.4 *Social Capital*

Family. In terms of parental background, the two countries differ little as far as fathers are concerned: they are overwhelmingly farmers. Mothers have different occupations, however, with over half of them involved in trade in Benin vs. ten percent in Malawi. Benin mothers also have a much longer experience in trade than their Malawian counterparts: 21 years of experience on average vs. 9 in Malawi. In terms of gender, 80% of traders are women vs. 36% in Malawi, reflecting a long tradition of female involvement in trade along the West African coast.

Family size also differs across the two trader populations, with Benin traders having more sons, daughters, brothers and sisters. Family involvement in trade also varies: Benin traders have more than twice as many close relatives involved in trade than Malawian traders.

Results therefore suggest that involvement in trade is more ancient in Benin. Traders are older, have more experience, and have had much exposure to trade from their parents and close relatives. One would consequently expect Benin traders to be more sophisticated and more efficient. Because their background is very 'traditional', however, the sophistication they can achieve is likely to follow informal avenues—building up social networks, achieving trust through personal relationships (Fafchamps and Minten, 1999, 2000, 2001a).

In contrast, Malawian traders are younger, better educated, and more likely to come from a non-agricultural or wage employment background. We would therefore expect them to be more 'modern', that is, more inclined to experiment with new marketing techniques and modern technology such as motorized vehicles, telephones, and formal contracts. Better education may also enable Malawian traders to delegate authority to subordinates and thus to grow and have larger firms.

Table 7. Traders' Social Capital: Family

	Benin				Malawi			
	Mean	S.d.	Median	N	Mean	S.d.	Median	N
Number:								
Live father	0.46	0.70	0	661	0.48	0.50	0	737
Live mother	0.66	0.60	1	661	0.74	0.44	1	737
Spouse	1.08	0.74	1	661	0.82	0.41	1	737
Son over 15	1.35	1.77	1	662	0.44	0.91	0	737
Daughter over 15	1.31	1.78	1	662	0.41	0.89	0	737
Brother over 15	2.77	2.90	2	657	1.85	1.39	2	737
Sister over 15	2.62	3.02	2	655	1.91	1.56	2	737
Number in trader's business:	0.94				0.29			
Live father	0.00	0.04	0	661	0.00	0.04	0	737
Live mother	0.04	0.20	0	661	0.01	0.07	0	737
Spouse	0.06	0.32	0	662	0.12	0.33	0	737
Son over 15	0.12	0.55	0	662	0.04	0.30	0	737
Daughter over 15	0.23	0.63	0	662	0.01	0.08	0	737
Brother over 15	0.02	0.18	0	662	0.07	0.31	0	737
Sister over 15	0.12	0.46	0	661	0.01	0.12	0	737
Another relative	0.34	1.14	0	663	0.03	0.31	0	738
Number in another trading business:	2.89				1.42			
Live father	0.07	0.26	0	661	0.08	0.27	0	737
Live mother	0.27	0.56	0	661	0.12	0.33	0	737
Spouse	0.32	0.77	0	662	0.22	0.42	0	737
Son over 15	0.13	0.53	0	662	0.07	0.30	0	737
Daughter over 15	0.32	0.95	0	662	0.04	0.25	0	737
Brother over 15	0.42	1.18	0	658	0.56	0.85	0	737
Sister over 15	1.37	2.12	1	657	0.33	0.75	0	737
Number of wage workers:								
Live father	0.04	0.39	0	661	0.03	0.18	0	737
Live mother	0.01	0.08	0	661	0.00	0.06	0	737
Spouse	0.22	0.90	0	662	0.08	0.36	0	737
Son over 15	0.07	0.34	0	662	0.07	0.33	0	737
Daughter over 15	0.05	0.37	0	662	0.02	0.20	0	737
Brother over 15	0.39	1.08	0	659	0.34	0.69	0	737
Sister over 15	0.08	0.43	0	657	0.09	0.34	0	737

Trading Contacts and Associations. We find that respondents know on average 37 to 42 other traders split more or less equally between purchase and sales markets. Medians are 23 for Benin and 20 for Malawi. The two countries, however, differ in the number of traders respondent knew at start-up: 17 on average in Benin vs. 6 only in Malawi. This is undoubtedly a reflection of the fact that Benin respondents had much more prior exposure to agricultural trade than their Malawian counterparts.

The two countries also differ in the extent of associative life. Two thirds of Benin traders are member of a trader association compared to only 3% of Malawian traders. They have been members for 7 years on average instead of 3 in Malawi, and Benin associations count many more members -- 188 on average vs. 29 in Malawi. Benin traders agree to pay association fees equivalent to $6 a year, while Malawian traders pay nothing. The average number of association members who are also trading partners of the respondent is 34 in Benin compared to 7 only in Malawi. Traders' associations thus play a much more prominent role in Benin.

Regarding the perceived advantages of being part of an association, by far the most important reasons are internal to the traders' community: access to market information; mutual insurance; resolution of commercial disputes. These reasons account for 55% of the responses in Benin and 46% in Malawi. Restricting competition is also in traders' mind, especially in Benin: 29% of Benin traders and 16% of Malawian traders cite various restrictions on competition (e.g., price fixing, restricting entry, coordinating purchases and sales) as the main advantage their derive from their membership in traders' associations. Dealing with external forces is also an important motivation (e.g., negotiating with government, access to credit, group orders). It accounts for 15% (Benin) and 35% (Malawi) of the responses.

Table 8. Traders' Social Capital: Contacts and Associations

	Benin				Malawi			
	Mean	S.d.	Median	N	Mean	S.d.	Median	N
% Traders member of association	62.4%	0.48	1	659	3.1%	0.17	0	737
Number of associations	1.2	0.66	1	413	1.1	0.29	1	22
Years of membership	7	8	4	411	3	3	3	22
Annual membership fees[a]	6	33	0	657	0	3	0	736
Number of members	188	182	120	293	29	30	12	21
Number of trading partners	34	90	2	395	7	12	4	22
Advantages to Membership (% traders)								
Access to credit	8.53				22.81			
Access to market information	11.58				15.79			
Commercial contacts	5.48				8.77			
Commercial dispute resolution	11.66				15.79			
Negotiate with government	4.53				10.53			
Credibility	3.83				5.26			
Protection against unfair competition	0.44				5.26			
Agree on prices	13.84				1.75			
Group orders	1.48				1.75			
Mutual insurance	22.19				0.00			
License fee	3.22				1.75			
Coordinate purchases and sales	11.40				7.02			
Other	1.83				3.51			

[a] US$ equivalent. At the time of survey, exchange rates used are 1 US $= CFA 600 and 1 US $ = MK 45.

4. Trading Practices

4.1 Specialization

Specialization by Crop. Surveyed traders deal primarily in maize, beans, and roots and tubers. Together, these crops account for 80 to 90% of the main crops traded. None of the surveyed Benin traders deals in cotton, the main cash crop of the country. Cotton marketing remains entirely in the hands of the government marketing board. A small number of surveyed Malawian traders deal in tobacco, the principal export crop. This is the result of a recent liberalization in tobacco marketing. Less than five surveyed traders sell chemical inputs such as fertilizer or pesticides. Agricultural inputs are typically sold either by ADMARC or by local branches of large trading operations.

Table 9. Agricultural Products Traded by Region in Malawi
(average shares of total sales by region)

	South	Central	North	Country-wide
Maize	26.00%	30.80%	24.00%	27.40%
Irish potato	3.20%	3.00%	1.30%	2.90%
Sweet potato	9.90%	4.70%	7.30%	7.80%
Cassava	7.80%	3.50%	3.30%	5.70%
Rice	12.30%	1.70%	24.70%	10.20%
Beans/pulses	30.90%	28.00%	24.00%	29.00%
Gr/nuts	7.60%	4.70%	15.30%	7.60%
Tobacco	1.50%	14.40%		5.80%
Chili	0.20%			0.10%
Soyabeans	0.30%	7.90%		3.00%
Total	100.00%	100.00%	100.00%	100.00%
N	593	403	150	1146

Table 10. Agricultural Products Traded by Region in Benin
(average shares of total sales by region)

	Region						Country-wide
	Atacora	Atlantique	Borgou	Mono	Oueme	Zou	
Maize	24.05	38.93	26.36	47.37	45.41	42.13	34.05
Sorghum/millet	20.27	1.34	17.86			2.03	10.22
Small millet	1.37		1.53			1.02	0.90
Rice	9.62	0.67	4.79		0.44	0.51	3.68
Beans/pulses	15.12	9.40	7.41	38.60	17.47	11.17	13.76
Groundnuts	13.75	2.68	3.49	9.65	1.75	11.68	6.81
Bambara groundnuts	0.69	0.67	0.22		0.44	3.05	0.76
Soy		0.67	0.65			2.03	0.56
Manioc	1.72		0.22				0.42
Yams	2.41	10.07	10.89		3.49	8.63	6.74
Fruit			0.22		0.44		0.14
Tomatoes	0.69	0.67	0.87		3.06	0.51	1.04
Onion	0.34	0.67	1.53		0.44	3.05	1.11
Gombo			0.22				0.07
Chili		4.03	1.74	0.88	4.37		1.74
Other vegetables			0.65				0.21
Other crops	5.84		7.19		5.24	0.51	4.38
Pineapple		0.67					0.07
Cashew nut			1.09		0.44	0.51	0.49
Cassava	1.03	20.81	4.79	3.51	16.16	11.68	8.34
Cossette yams	1.03	4.70	6.75		0.44	1.52	3.13
Cossette manioc	2.06	4.03	1.53		0.44		1.39
Total %	100.00	100.00	100.00	100.00	100.00	100.00	100.00
N	351	432	515	242	500	269	2309

Specialization by Activity. Some traders -- 12% in Benin, 25% in Malawi—sell products other than agricultural, but on average surveyed traders derive 95% of their trade revenue from agricultural trade. Traders are thus moderately specialized by sector. But they do not specialize by crop: two thirds of all surveyed traders sell more than one agricultural product; 45% sell more than two. In addition, 23% (Malawi) to 30% (Benin) of traders have an activity other than trade. In Benin, this activity is overwhelmingly farming; in Malawi, it is overwhelmingly non-agricultural trade. Nearly all traders have a principal market from which they organize their activities. In that market, most of them have a place—stall, store, shed -- for their exclusive usage. Three quarters of surveyed traders also operate in other markets—on average 1.3 to 1.6 purchase markets and 0.3 to 0.5 sales markets. This suggests that traders normally base their operation at their sales market and purchase from one or two other markets.

Specialization by Trading Function. Traders are not fully specialized by function in the marketing chain. Most traders are retailers but half of Benin retailers and a quarter of Malawian retailers also operate as wholesalers. One sixth of Benin traders and one fourth of Malawian traders specialize in wholesale only. Most traders purchase at least some of the quantities they sell directly from farmers. In fact, 48% and 74% of all retailers in Benin and Malawi, respectively, purchase from farmers. This apparent lack of functional specialization makes it hazardous to categorize respondents by their function in the marketing chain. A very small proportion of surveyed traders also operate as buying or selling agent for other traders.

Table 11. Specialization of Traders in Benin and Malawi

	Benin		Malawi	
	Mean	S.d.	Mean	S.d.
% Traders:				
Sell wholesale	69%	46%	40%	49%
Sell retail	74%	44%	82%	39%
Purchase from farmers	70%	46%	92%	28%
With a principal market	98%	13%	100%	0%
With a place for exclusive use	74%	44%	93%	25%
Operate in other markets	70%	46%	78%	41%
Operate as buying agent	6%	24%	2%	14%
Operate as consignment agent	2%	12%	1%	10%
Operate as broker	1%	11%	1%	12%
Sell products other than agricultural	12%	33%	25%	43%
Number of other purchase markets	1.6	1.3	1.3	1.1
Number with exclusive use	0.4	0.9	0.1	0.3
Number of other sales markets	0.5	0.8	0.3	0.6
Number with exclusive use	0.3	0.6	0.0	0.2
Percentage of revenue from ag. trade	95	15	92	19

4.2 Firm Ownership

The overwhelming majority of independent trading enterprises are held in sole ownership by a local resident who is also a national of the country studied. Only 30 of the 1400 surveyed traders are foreign nationals, of which all except one are African. The owner has typically initiated the business himself or herself. The overwhelming majority of respondents initiated the enterprise themselves without help from anyone. Ten to twenty percent of respondents received financial assistance from their family at start-up. For those respondents who did not start the business themselves, they either inherited it or received it as a gift. Virtually no one purchased their enterprise, suggesting that goodwill and reputation are not attached to a specific location, trademark, or business name (Tadelis, 1999). A similar survey in Madagascar indeed showed that African agricultural traders never sell under a trademark or business name (Fafchamps and Minten, 1999).

Table 12. Ownership of Trading Enterprises in Benin and Malawi

	Benin			Malawi		
	Mean	S.d.	Median	Mean	S.d.	Median
% of firms where manager is owner	97%			100%		
% of firms where owned by:						
Local resident	99.7	3.8	100.0	97.2	16.3	100.0
Resident from another town	0.3	3.8	0.0	2.8	16.3	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0
Management of firms:						
% where manager in charge	97%	18%	100%	100%	5%	100%
% where manager responsible for purchases	99%	11%	100%	100%	5%	100%
% where manager responsible for sales	99%	10%	100%	99%	12%	100%
Number of years respondent is in operation	15	9	13	7	6	5
Number of years respondent is in charge	15	9	13	7	6	5
% Firms where owner started the business	92%	27%	100%	99%	10%	100%
% Managers who worked in another business	56%	50%	100%	51%	50%	100%
Number of years of experience elsewhere	5	6	4	2	4	0
% Managers who worked as agent before	15%	36%	0%	3%	18%	0%
Number of years of experience as agent	1	3	0	0	1	0
Characteristics of firm owner:						
Age	41	11	40	33	9	32
% Women	81%			36%		
Years of trade experience of father	4	12	0	6	10	0
Years of trade experience of mother	21	19	25	5	9	0
% Engaged in activity other than trade	30%			23%		

4.3 Quantity Inspection: Weights and measures

Given that only a handful of traders have proper weighting equipment, most trade takes place by volume. In practice, volume may be a better way of measuring the value of an agricultural product than weight. Indeed, the weight of a crop can be artificially inflated by adding water. Since excess moisture raises storage losses, buying by weight generates adverse incentives for farmers not to dry their crops properly before offering them for sale. Most crops also tend to dessicate over time without losing (much) of their caloric content. Since water can be added when food is prepared for consumption, this is usually not a problem—at least for cereals, pulses, groundnuts, roots and tubers. The same holds for most cash crops. The main exception is fruits and vegetables. By focusing on volume instead of weight, traders insure themselves against most storage losses, which are weight losses due to desiccation.

In the two studied countries, burlap and plastic bags of various sizes serve as measures of volume. The weight in a given bag obviously varies by crop but, for a given crop, a standardized-size bag can serve as measurement unit. No less than 11 different types of bag sizes are used in the two studied countries. The bags are usually named after the amount of maize they would contain—from 20 kg to 200 kg. Benin favors 100kg and 200kg bags; Malawi favors 50kg, 70kg, and 90kg bags. Weight measures such as kg or ton are used as well, but in less than 10% of all purchases.

In practice, burlap and plastic bags are not perfect measures of volume. The first reason is that burlap bags tend to loosen over time so that older bags tend to contain more than new ones. The second reason is that the volume contained in a bag varies with the way it is filled and sealed. Measures are thus somewhat subjective in the sense that they depend on the state of the traders' bags and on the way they are filled. This subjectivity may explain why traders nearly always transfer purchased goods from the bags of the seller to their own bags. This is a time-consuming and cumbersome process, but it may be essential to an assessment of volume by the buyer. It also enables the buyer to assess the quality of the product since, in the transfer process, what was at the bottom of the seller's bag ends at the top of the buyer's.

4.4 Quality Inspection

We begin by noting that surveyed traders trade in non-standardized products. By their own account, three quarters of surveyed traders deal in products with multiple varieties. Two third also state that the product they sell varies by quality. Variation in variety and quality is associated with price differences. The coefficient of variation of prices due to quality and variety differences is 0.13 in Benin and 0.10 in Malawi (median 0.12 and 0.07). This means that a trader could lose most of his or her margin by purchasing a product of poor quality or of the wrong variety. Assessment of the product is thus essential.

Direct inspection is the only method by which surveyed traders assess quality. Only a handful of traders (10 out of more than 2000 responses) declare relying on the supplier to identify the variety and assess the quality. Only one respondent stated that he relies on the package. This finding is similar to those reported by Fafchamps and Minten (1999) for Madagascar. It stands in contrast with results reported by

Tripp and Pal (1998) regarding agricultural seeds in India. Inspecting each purchased load for quality is likely to be time-consuming. Since it requires experience and familiarity, it may be hazardous to delegate this function to inexperienced or unmotivated employees. Quality control is thus likely to represent a major obstacle on business expansion.

4.5 Relationships with suppliers and clients

Another important dimension of trade as a business is the relationships traders have with their suppliers and clients. The overwhelming majority of surveyed traders have regular clients and suppliers. The number of regulars is fairly large: 6.5 regular suppliers and 7 clients in Benin; 11 suppliers and 15 clients in Malawi. Respondents do close to half of their business with these few individuals. Trade is thus very personalized. Networks of traders play an important role in the movement of agricultural products.

As far as the composition of these networks is concerned, ethnic concentration appears less prevalent than often assumed (Fafchamps, 1999). Less than half the regular suppliers and clients are from the same ethnic group or religion as the respondent. Only a tiny proportion of regulars are relatives. Contrary to what is claimed by Granovetter (1995) regarding immigrant business networks in the U.S., business relationships among African traders are not primarily built on the family. (Fafchamps and Minten, 2000)

Respondents meet outside business with about a quarter of their regular suppliers and clients in Benin, but only 8 to 15% of them in Malawi. Social interaction is primarily through business. Some 12% of Benin suppliers and clients sell exclusively to or buy exclusively from the respondent. The equivalent figure for Malawi is 23%. In contrast, respondents nearly never see themselves as bound to buy only from or sell only to regulars.

Table 13. Traders' Relationships with Regular Partners in Benin and Malawi

	Benin		Malawi	
	Suppliers	Clients	Suppliers	Clients
% Traders that have regular clients or suppliers	79%	69%	74%	88%
% Regulars of same origin	90%	87%	67%	92%
% Regulars of same ethic group	47%	49%	41%	45%
% Regulars of same religion	43%	40%	29%	36%
% Regulars with whom meet socially	26%	28%	8%	15%
% Regulars that are close relatives	5%	6%	4%	7%
% Regulars that have exclusive relations	12%	12%	22%	23%
% Traders can sell or buy with non-regulars	99%	99%	99%	99%
Number of regulars in main market	2.7 (6.1)	6.5 (10.1)	5 (15)	14 (23)
Number of regulars in other markets	3.9 (6.4)	0.8 (4.0)	6 (15)	1 (11)
% of total trade with regulars	51 (33)	37 (32)	45 (34)	50 (29)

4.6 Payment Methods and Trade Credit

Regarding transaction methods, payment in cash is universal. Payment in foreign currency or in kind occurs very occasionally. Payment by check is unheard of, indicating the lack of sophistication of banking methods by traders and also perhaps the lack of trust among traders.

Table 14. Payment Methods in Agricultural Trading in Benin and Malawi

	Benin			Malawi		
	Mean	S.d.	N	Mean	S.d.	N
Of transactions with suppliers:						
% Cash, local currency	99.5	5.1	662	99.2	6.4	738
% Other currency	0.5	5.1	662	0.4	5.5	738
% Wire transfer	0.0	0.0	662	0.0	0.3	738
% Check	0.0	0.0	662	0.0	0.0	738
% In kind	0.0	0.0	662	0.4	3.2	738
Of transactions with clients:						
% Cash, local currency	99.9	1.9	660	98.1	11.6	738
% Other currency	0.1	1.6	660	0.5	6.3	738
% Wire transfer	0.0	1.2	660	0.0	0.0	738
% Check	0.0	0.0	660	1.3	9.5	738
% In kind	0.0	0.0	660	0.1	0.9	738

Supplier credit is moderately common in Benin but fairly rare in Malawi. In Benin, respondents state that close to one quarter of their purchases and sales are made on credit. Sixty percent of respondents claim to be given credit by at least some of their suppliers. Three quarters of them extend credit to at least some of their clients. Corresponding numbers in Malawi are much lower: purchases on credit account for only 3% of total purchases; credit sales amount to only 11% of all sales. Some 85% of Malawian traders claim to never receive credit from suppliers; one third never grant any credit to clients.

Table 15. Incidence of Trade Credit and Advance Payments to Farmers

	Benin				Malawi			
	Mean	S.d.	Median	N	Mean	S.d.	Median	N
Of purchases from suppliers:								
% Credit	23	26	20	662	3	11	0	737
%Payment upon delivery	74	27	80	662	95	13	100	737
%Advance payment	4	9	0	662	2	7	0	737
Of sales to clients:								
% Credit	23	24	20	660	11	14	5	738
% Payment upon delivery	76	24	80	660	87	19	90	738
%Advance payment	0	4	0	660	0	3	0	738
Advances to Farmers								
% Traders buy with advance	24			654				
Account payable:[a]								
Currently due	24	116	0	486	0	4	0	731
Maximum due	310	855	33	663	8	46	0	738
Account receivable:								
Currently due	1	10	0	280	5	47	0	734
Maximum due	69	385	0	663	32	265	0	738

[a] US$ equivalent. At the time of survey, exchange rates used are 1 US $= CFA 600 and 1 US $ = MK 45.

Outstanding balances on trade credit are very small: $24 in Benin, nothing in Malawi. This is probably because trade credit is of very short duration: 6 to 8 days on average with suppliers, 9 to 11 days on average with clients. In the overwhelming majority of cases, traders do not charge a different price if they sell cash or on credit. Discussions with respondents suggest that sales on credit correspond to large quantities. Credit seems to be used to incite the buyer to buy more. In this context, waiving interest on trade credit is like offering a quantity discount.

Some traders also extend credit to farmers: 25% of traders in Benin, less than 10% in Malawi. Purchases with advance payment to farmers represent a minute proportion of total purchases -- 4% in Benin, 2% in Malawi. Crop prices are either set in advance (40% of the cases in Benin, 75% in Malawi) or set equal to the market price at the time of delivery. Prices are negotiated at delivery only in a handful of cases. Only in 16 to 24% of the cases do credit and cash differ. When they do, median cash prices are 13% higher than credit prices. We therefore find little evidence that advances to farmers hide 'exploitative' practices by traders (Crow and Murshid 1994).

Table 16. Contractual Terms of Trade Credit and Advance Payments

	Benin					
	Mean	S.d.	Min.	Max.	Median	N
Credit from suppliers						
Days to pay	8.13	6.32	2.00	100.00	7.00	379
% Traders pay different price	5.9					409
% Credit premium	8.06					24
Credit to clients						
Days to pay	9.09	13.48	1.00	279.00	7.00	469
% Traders pay different price	7.8					498
% Credit premium	6.06					40
Advance payment to farmers						
Days to pay	13.70	19.55	2.00	90.00	7.00	20
% Traders pay different price	16					151
Determination of price						
% Market price at delivery	58					157
% Price set forward	40					157
% Advance discount	12.50					28

	Malawi					
	Mean	S.d.	Min.	Max.	Median	N
Credit from suppliers						
Days to pay	5.60	4.53	1.00	30.00	5.00	106
% Traders pay different price	11					115
% Credit premium	25.00					13
Credit to clients						
Days to pay	10.97	11.32	1.00	60.00	7.00	423
% Traders pay different price	14					511
% Credit premium	12.28					73
Advances to farmers						
Days to pay	14.38	22.22	1.00	90.00	5.00	52
% Traders pay different price	0.24	0.43	0.00	1.00	0.00	67
Determination of price						
% market price at delivery	19					69
% price set forward	75					69
% Advance discount	0.00					

Credit duration is a bit longer than with traders -- 14 days on average with a median of 7 days—but it is certainly shorter than the agricultural season. Surveyed traders therefore are not in the business of financing agricultural production. Advances to farmers appear like a way for traders to secure sufficient quantities and plan their activities from one week to another.

4.7 Use of Intermediaries

Intermediaries—brokers, buying agents, consignment agents—are a substitute for networks: instead of knowing lots of potential buyers, a trader might choose to know a single agent who sells to all of them. To investigate these issues, data were collected on the use of intermediaries. Results indicate that intermediaries are much more frequently used in Benin than in Malawi: 31% of Benin traders use buying agents; 26% use consignment agents. The corresponding numbers are 6% and 0% in Malawi. The only category of intermediaries where the two countries are more or less similar is brokers: 8% of Benin traders use them, vs. 3% of Malawian traders. Some 70% of Benin traders also use an intermediate category called 'apprentice'. Although not strictly speaking agents, apprentices straddle across the employee and agent category. In practice they are encouraged to use their initiative and are used as selling agents. In two third of the cases, apprentices are close relatives. On average Benin traders deal with 2 such apprentices.

Similar figures arise if we focus on the last purchase only. We find that 31% of Benin traders used an agent to purchase agricultural products vs. only 3% of Malawian respondents. On the selling side, 27% of Benin traders used an agent vs. 3% in Malawi. In Benin, the selling agent is half the time a broker, half the time an apprentice.

The total number of agents used also varies significantly across the two countries, with a much larger number of agents—especially buying agents and apprentices (selling agents) -- used in Benin and a longer period of acquaintance -- 2.2 years for buying agents in Benin vs. 1 month in Malawi. Malawian agents are portrayed as rather similar to the respondent in terms of origin, ethnicity, and religion. Social interaction outside business is also more likely than in Benin, and agent are more likely to be close relatives

and to operate exclusively for the respondent. In contrast, Benin agents appear to be as different from the respondent as are regular clients and suppliers.

From this information, we conclude that the use of intermediaries is much more prevalent in Benin and that agents are more easily trusted. In contrast, Malawian respondents deal with few agents and do so only sporadically. When they do, the agent is someone they can identify with more easily than with the general trader population.

Table 17. Traders' Use of Intermediaries in Benin and Malawi

	Benin			Malawi		
	Buying agent	Broker	Consign. agent	Buying agent	Broker	Consign. agent
% Traders with at least one agent	31%	8%	26%	6%	3%	0%
Average number of agents	1.79	0.29	0.37	0.17	0.09	0.01
Average years worked together	2.22	0.49	2.23	0.15	0.05	0.01
% Traders with agents:						
Of same origin	85%	85%	78%	96%	100%	100%
Of same ethnic group	42%	41%	36%	76%	69%	100%
Of same religion	37%	36%	43%	60%	40%	100%
With whom meet socially	27%	44%	35%	43%	34%	43%
Who are close relatives	7%	6%	4%	20%	9%	14%
Who are exclusive agents	23%	13%	13%	56%	22%	100%

4.8 Information gathering and search

Next we examine how traders collect information about prices and market conditions and search for suppliers and clients. The average agricultural trader follows (a little over) two agricultural products regularly. He or she also follows regularly two supply markets and (a little over) one sales market. This is consistent with the observed pattern by which most surveyed traders are located in their sales market and source their products from a small number of nearly supply markets.

Surveyed traders regularly consult an average of 3 people in Benin -- 7 people in Malawi—to collect information about prices. More people are consulted on the trader's main market (which is typically a sales market) than on other markets (which are typically supply sources). This is probably because the trader

spends more time on his main sales market. Tracking the ongoing selling price closely is essential to get the highest possible margin without losing customers. An average of (a little over) one worker participate to the collection of price information, which imply that most employees of the trading enterprise are involved in one way or another in closely monitoring prices. In 54% of cases, Benin traders estimate that so doing they are able to collect reliable information about ongoing prices on supply markets without having to visit them; 78% of Malawian traders make the same claim.

We asked respondents to report the main source of information on prices in their main market and other markets. Talking to other traders is by far the major source of information on prices either in one's own market or on other markets: 64% of Benin traders and 84% of Malawian traders report conversations with other traders, including clients and suppliers, as their main source of information about prices in their home market. Surprisingly, intermediaries are hardly ever mentioned. Surveyed traders do not appear to rely on agents to quote reliable prices. In Malawi, 7% of respondents respond that they do not need to collect information because they set their own price.

Regarding other markets, talking to other traders is again the main source of information. Suppliers are reported as a major source of information by one third of Malawian traders. This is a priori surprising since suppliers have an incentive to overestimate the price. The radio is cited as a main source of information by 8% of Malawian traders. One quarter of Benin traders and ten percent of Malawian traders rely on personal observation— which means that they physically visit the market, eavesdrop, and act as a potential customer to get price quotes.

Keeping in touch with other markets, however, takes a bit more effort than just talking with a few traders. One important factor in this state of affairs is the extremely low usage of telephones: agricultural traders place, on average, 4 to 8 business-related calls a year. This is an extremely low frequency that is likely to change as cellular phones become more widely available in Africa.

Personal visits to other purchase and sales markets make up for lack of telephone. Surveyed traders make an average of 250 trips a year to purchase and sales markets in Benin and 92 trips a year in Malawi. The corresponding medians are 133 (Benin) and 52 (Malawi). In Benin, most trips are to sales market; in

Malawi, three quarters of the trips are to supply markets. As mentioned earlier, the cumulated annual cost of these trips is not negligible and it represents a major cost for traders.

The high frequency of travel means that traders are absent quite often from their main market. Given that they do not use telephones, they cannot easily keep in touch with conditions in their main market while they are away. The need to travel frequently to supply markets probably explains why traders source products primarily from nearby markets.

Table 18. Search Behavior of Traders in Benin and Malawi

	Benin			Malawi		
	Mean	S.d.	N	Mean	S.d.	N
Information collection						
Number of products followed	2.3	1.6	662	2.1	1.1	738
Number of supply markets followed	2.0	1.7	662	2.1	1.2	738
Number of sales markets followed	1.2	0.5	660	1.3	0.8	738
Number of people consulted in own market	1.8	1.6	651	5.3	6.2	737
Number of people consulted in other markets	1.5	2.0	647	2.0	3.1	737
Number of employees who collect price information	1.1	2.1	656	1.2	0.9	733
% Traders who obtain reliable information without visit	54%	0	502	78%	0	593
Cost of search						
Number of phone calls per year	4	32	606	8	76	685
Number of trips to purchase markets per yr.	107	439	642	74	133	710
Cost of trips to purchase markets ($/yr)	297	1421	537	443	1348	564
Number of trips to sales market per year	145	698	627	25	75	623
Cost of trips to sales markets ($/yr)	177	805	414	1219	4843	219

4.9 Contractual performance

Respondents were asked to report the number of cases of contract non-performance they encountered in the year preceding the survey. Results indicate a much higher incidence of contractual non-performance in Malawi than in Benin. In Benin, traders only report a handful of cases of bad quality, disagreement over measures, or ex post price renegotiation with suppliers. In contrast, Malawian traders report close to 200 such occurrences per year—roughly 6% of purchases. Because Malawian traders are more likely to place orders with suppliers, they are also more likely to encounter late or non-delivery problems. In fact, the probability of non-performance appears to be quite high on orders. Given that the placement of orders is more likely when the market is tight, this is hardly surprising. But it serves as a reminder that surveyed traders do not conceive contracts as binding.

The two countries are more similar on the selling side, although the frequency of payment problems is about twice as high in Malawi than in Benin. Malawian traders are also much more likely to mention efforts by clients to renegotiate prices ex post. The frequency of payment problems is very low in both countries—of the order of 0.5 to 0.6%. Surveyed traders have on average one person in the firm dealing with debt collection. The fear to lose one's reputation might be a deterrent to non-payment: 53% of Benin traders and 70% of Malawian traders state that other suppliers would get to know if a client would not pay the respondent.

Table 19. Contract Enforcement and Commercial Disputes in Benin and Malawi

	Benin			Malawi		
	Mean	S.d.	N	Mean	S.d.	N
Problems with suppliers (% of traders):						
Bad quality	3%		663	41%		736
Disagreement over measuring	7%		663	35%		733
Renegotiate price	12%		662	25%		731
Cases of bad quality per year	0.3	2.8	663	63.9	340.9	736
Cases of measuring dispute per year	2.3	12.4	662	99.5	410.9	733
Cases of price renegotiation per year	1.6	6.0	657	45.7	217.5	731
Orders with Suppliers						
% Traders who place orders	6%		658	32%		735
% Total purchases on order	1.2	6.4	655	6.3	12.7	733
Number suppliers from whom order	0.0	0.4	656	0.7	3.9	732
% Traders with late delivery problems	18%		50	41%		296
% Traders with problems of partial delivery	20%		50	31%		296
% Traders with problems of no delivery	16%		50	27%		295
Cases of late delivery per year	5.0	20.8	50	37.5	197.5	296
Cases of partial delivery per year	3.1	9.3	50	19.0	57.7	296
Cases of no delivery per year	0.3	0.8	50	31.3	148.0	294
Problems with clients (% of traders):						
Late payment	24%		660	42%		734
Partial payment	21%		660	34%		733
No payment	20%		660	25%		733
Renegotiate price	5%		658	20%		731
Cases of late payment per year	10.8	34.1	656	15.2	36.5	734
Cases of partial payment per year	9.8	62.2	656	14.9	71.8	733
Cases of no payment per year	0.9	3.4	659	7.1	62.4	732
Cases of price renegotiation per year	0.4	2.1	655	116.0	506.7	730
Number clients who order	0.1	0.6	662	0.5	1.6	722
Number of sales	3102	4433	198	7898	9140	734
% Traders for whom others will find out if they encounter non payment problems	53%		619	70%		734
Number of employees dealing with debt collection	1.1	1.0	641	0.7	0.6	682

4.10 Protection of property

We end this section with a short description of how surveyed traders protect their property. In the year preceding the survey, 16% of Benin traders and 33% of Malawian traders were victims of theft. This is higher than the incidence of theft reported in Fafchamps and Minten (2001b) for Madagascar. The value of stolen property was fairly low, however: $22 per year on average. Some traders, however, incurred much higher losses—of the order of $2500 in each country.

Few respondents directly blame employees for the thefts, but only 62% of Benin traders are confident that employees were not involved (72% in Malawi). Contrary to what Fafchamps and Minten (2001b) report for Madagascar, fear of pilferage does not discourage traders from hiring employees: only 3% of Benin respondents and 11% of Malawian respondents state they refrain from hiring additional employees for fear of theft.

The methods most commonly used to protect one's property are to lock it at night (75% of those who store in Benin, 87% in Malawi), hire a guard (40% and 28% respectively) and sleep on the premises (19% and 48% respectively). For those who transport, some protection is occasionally sought as well: some traders travel in convoy (10% in Benin, 19% in Malawi); some avoid particular routes (8% in Benin, 17% in Malawi); and some hire guards during transport (4% and 17%). Protection during transport thus appears slightly more problematic in Malawi, possibly because the country is less densely populated and ambush is easier to organize.

Table 20. Methods of Protecting Commercial Property in Benin and Malawi

	Benin			Malawi		
	Mean	S.d.	N	Mean	S.d.	N
Incidence of Theft						
Victim of theft	16%		662	33%		730
Employees involved in theft	5%			9%		
Value of stolen property (%of sales)	0.59	4.50	627	0.28	1.83	683
Methods to Protect Property (% Traders)						
Avoid hiring employees	3%		660	11%		735
Goods kept under lock	65%		639	82%		735
Guard on premises	34%		639	26%		735
Sleep on premises	15%		639	45%		735
Travel in convoy	8%		639	13%		735
Avoid certain routes	7%		639	13%		735
Hire guard during tranport	3%		639	12%		735

5. Commercial Activities

In the following two sections, we compare commercial activities and market performance of traders across categories, or terciles, of firm assets— namely working capital, human capital, and social capital— as well as gender. We begin with a brief discussion of the asset categories. In the case of working capital, we noted earlier that working capital held by individual traders was extremely skewed in both countries, particularly in Benin, where working capital ranges from $0 to $217,000, and less so in Malawi, where it ranges from $0 to $34,100. Thus, in Benin, the bottom tercile has up to $167 in working capital, while the second tercile has between $167 and $667 in working capital. The top tercile of working capital has a very broad range, from $667 to the maximum, $217,000, working capital. In contrast, traders' working capital appears to be more widely distributed in Malawi. Thus, the bottom tercile has up to $1900 in working capital, while the middle tercile has a range between $1900 and $11,300. The top third has a range from $11,300 to $34,100.

Unlike working capital, the amount of human resources employed by traders does not vary significantly within the sample. In both countries, the majority of trading firms employ one employee (44% of the sample in Benin and 72% in Malawi), suggesting that trading firms remain micro-enterprises. In the top third of firms in Benin, the number of employees varies from 2 to 14, with the exception of 4 firms with a greater number of employees (up to a maximum of 67 employees). In Malawi, only 11% of firms have more than 2 employees, up to a maximum of 22 employees.

In terms of social capital, defined as the number of trading contacts known by each respondent, traders in both countries have quite similar patterns. The 66th percentile is 33 and 36 contacts in Benin and Malawi, respectively. The top third has a considerably broader range, up to 530 contacts in Benin and 244 contacts in Malawi.

5.1 Annual Sales

Overall, median sales do not differ much across the two countries, with the median trader selling $5,300 to $6,700 worth of merchandise per year. These differences across countries mask dramatic variation in volume of activity within each country: the Gini coefficient of the total value of annual sales is 0.60 in Benin and 0.38 in Malawi. In both countries, the largest surveyed trader had sales of 2.6 to 2.8 million dollars a year while 17% of the sample sold less than $1000 of merchandise in a year. Viewing median sales activity by working capital terciles reveals that the top tercile of traders have 11-13 times more sales than the bottom tercile and 4-5 times more than the middle tercile in both countries.

In sharp contrast, human resources do not appear to have as important returns in terms of sales activity in Benin. Median sales in the top human resource tercile are just 4 times higher than the bottom tercile and slightly more than twice as high as the middle tercile. In Malawi, where 72% of firms have 1 employee, firms with more than 1 employee have 4-5 times higher median sales. A similar pattern also exists for social capital in both countries, where the top tercile only has 2-3 times more sales than the bottom

terciles. These findings suggest that working capital is a more determinant factor in traders' activities than either human or social capital.

Finally, gender appears to have a significant impact on sales activity, such that male traders, who represent only 20% of the sample in Benin, have median sales less than 4 times that of female traders and nearly 3 times higher in Malawi, where female traders represent 35% of the sample.

Table 21. Value of Annual Sales (US$) by Firm Assets in Benin and Malawi[A]

	Benin					Malawi			
Working Capital	Mean	S.d.	Median	N	**Working Capital**	Mean	S.d.	Median	N
<$167	6730.17	33769.20	1256.20	156	< $78	4587.98	10152.16	2189.39	193
$167-$667	11584.85	22628.95	3315.41	226	$78 - $244	9324.91	13745.82	5762.43	201
>= $667	49678.56	192965.70	16227.29	201	>= $244	111471.30	292941.00	25222.22	204
Human Capital					**Human Capital**				
<=1 employee	20553.89	148507.28	2743.84	324	0 - 1 employee	13227.18	43077.18	4584.099	427
1 - 2 employees	16250.84	26356.02	4942.71	138	> 1 employee	120549.4	321935.10	20373.28	163
> 2 employees	36126.53	72551.90	12296.52	137					
Social Capital					**Social Capital**				
< 10	7648.122	12362.21	2402.91	165	< 15	23437.30	85306.21	3830.24	185
10 - 33	26843.05	174167.70	4370.39	234	15 – 36	56147.91	243645.00	6556.48	213
>= 33	30734.48	63358.51	9800.92	205	>= 36	46022.60	157136.00	8773.51	200
Gender					**Gender**				
Male	38804.14	73557.73	14402.37	120	Male	57823.06	214243.50	8781.95	387
Female	18983.95	122557.00	3724.44	486	Female	14798.12	68196.87	3177.16	211
Total	22908.74	114750.80	5366.64	606	Total	42642.02	178148.70	6579.04	598

[a] US$ equivalent. At the time of survey, exchange rates used are 1 US $= CFA 600 and 1 US $ = MK 45.

5.2 Transport: Arbitrage over Space

Transport Practices and Rates. One fifth of surveyed traders do not undertake any transport, by which they mean that they buy and sell from the same market. The others transport products across markets, nearly always with an external transporter.

Most transport (86%) takes place in trucks. Half of these trucks are small pick-ups. Some 13% of all transport takes place with non-motorized means of transport such as handcarts and oxcarts. Respondent

traders in either of the countries studied do not use train transport. Measured in dollars per ton per km, transport costs average $0.43 and $0.70 in Benin and Malawi, respectively. Transport charges vary dramatically by mode of transport, however. Non-motorized transport costs on average $1.78 (Benin) and $1.20 (Malawi). In contrast, motorized transport costs $0.28 and $0.63 in Benin and Malawi, respectively.

Regressing transport costs on distance and means of transport indicates that truck transportation has a higher fixed cost but lower cost per km. Consistent with expectations, we find that small trucks are significantly more expensive than large trucks, but the difference is not large. Non-motorized transport is use primarily on short distances -- 4km on average in Benin, 12km in Malawi. Large trucks are used primarily on long distances -- 120km in Malawi, 160km in Benin. Pick-up trucks are used on medium distances, e.g., 40 to 70km.

Taken together, these features suggest that transport follows some economic rationale. The quantitative importance of short hauls, small trucks, and non-motorized transport probably contribute to high marketing costs. Comparing between Benin and Malawi, transported distances appear slightly higher in Benin, and transport rates per ton are lower, varying between $11/ton to $14/ton in Benin, compared to $16 to $20/ton in Malawi. Further indication that the transport sector is more competitive in Benin is that the variation between the peak transport rate in the marketing year along selected routes and the prevailing rate at the time of the survey is lower in Benin, with an 3-11% increase in the peak season compared to a 16-18% increase in Malawi. These figures suggest that there may less congestion in the transport system in Benin, while transport may be more of a constraint in the peak transport period in Malawi.

Table 22. Transport Practices and Means

		Benin		Malawi	
		N	% Traders	N	% Traders
Transport Activity	No transport	124	19%	150	20%
	Only with own vehicle	36	5%	14	2%
	Only with transporter	502	76%	532	72%
	With own vehicle and transporter		0%	39	5%
	Total	662		735	
Means of Transport					
	foot	4	1%	7	1%
	bicycle		0%	53	9%
	handcart	74	14%	5	1%
	oxcart	2	0%	16	3%
	motorbike	11	2%		0%
	1 ton truck	213	41%	243	42%
	7 ton truck	178	34%	189	32%
	large truck	37	7%	43	7%
	train		0%	4	1%
	other	2	0%	22	4%
	Total	521		582	

Table 23. Transported Distances and Rates on Selected Routes

	Benin					
	Kilometers		$/ton[a]		Peak rate ratio	N
	Mean	S.d.	Mean	S.d.		
Route 1	64.05	114.67	11.23	9.82	1.11	504
Route 2	40.74	95.96	13.65	12.73	1.11	275
Route 3	17.08	64.73	12.15	7.82	1.03	119

	Malawi					
	Kilometers		$/ton[a]		Peak rate ratio	N
	Mean	S.d.	Mean	S.d.		
Route 1	55.27	80.20	16.04	15.62	1.18	563
Route 2	34.95	69.71	19.91	28.62	1.16	337
Route 3	13.10	50.64	20.06	41.25	1.17	122

[a] At the time of survey, exchange rates used are 1 US $= CFA 600 and 1 US $ = MK 45.

Transport in the Last Transaction. Information was collected on the last completed transaction undertaken by respondents. A 'transaction' is essentially a purchase of goods that is assembled by the trader in the supply market, transported to the sales market, and sold over a period of time. The average distance between the purchase and sale market varies between 53km in Malawi and 69km in Benin. Median distances are much shorter, however -- 15km in Malawi and 23km in Benin. This means that most agricultural traders only travel very short distances to their supply market.

Viewed by firms, traders in the lowest working capital terciles in both countries are typically retailers who do not engage in any transport. However, the analysis of the middle and top terciles of working capital, human resources, and social capital reveals that firm assets do not appear to greatly influence the distances traded. Similarly, while male traders do generally trade across greater distances in both countries, the median distances are not widely divergent between the two groups.

Table 24. Transported Distance (kms) on Last Transaction by Firm Assets

	Benin					Malawi			
	Mean	S.d.	Median	N		Mean	S.d.	Median	N
Working Capital									
<$167	22.51	67.19	0.00	170	< $78	28.22	46.65	0.00	230
$167-$667	55.61	80.55	25.00	229	$78 - $244	61.67	95.06	21.50	208
>= $667	130.46	260.53	51.50	192	>= $244	73.09	95.87	45.00	204
Human Capital									
<=1 employee	41.39	83.20	11.50	342	0-1 employee	52.37	86.95	10.00	468
1 – 2 employees	93.90	285.35	35.50	130	>1 employee	54.97	69.92	30.00	166
> 2 employees	108.21	141.96	53.00	135					
Social Capital									
< 10	29.40	60.62	11.00	185	< 15	45.32	76.73	2.00	205
10 – 33	59.36	213.74	12.00	227	15 - 36	53.15	91.64	14.00	226
>= 33	115.05	152.75	53.00	200	>= 36	61.26	80.37	40.00	211
Gender									
Male	110.32	146.89	52.00	121	Male	56.03	83.63	20.00	397
Female	58.72	166.32	18.00	493	Female	48.92	83.39	10.00	245
Total	68.89	163.85	23.00	614	Total	53.31	83.54	15.00	642

5.3 Storage: Arbitrage over Time

Most surveyed traders do not stock products. They typically purchase a load and hold onto it until it is sold, after which they visit their sale market to replenish their stock. Contrary to common beliefs, the great majority of traders do not undertake speculative or seasonal storage. The average stock held is a tiny fraction of annual sales -- of the order of 1% on average.

There is, however, a small minority of traders who are involved in arbitrage across time. Some 10% of traders hold stocks for over a month. To estimate returns to storage, we regressed the logarithm of the ratio of selling price over buying price on time and crop specific dummies. This yields an estimate of the increase in gross margin associated with storage. Results suggest that the return to an additional day of storage is 0.25% in Malawi and 0.05% in Benin. These figures, compounded on a daily basis to keep up with the estimation method, are equivalent to a return rate of 25% (Malawi) and 4% (Benin) on 90 day storage[1]. These results indicate that average returns to storage are not as large as often reported in the popular press, which is probably why so few traders bother to stock over long periods. Storage is also a very risky activity since realized returns can vary widely around these expected returns. Larger returns can probably be achieved by rotating one's working capital faster instead of immobilizing it in idle stocks.

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[1] Similar results are obtained with a linear specification. A median regression also yield similar results. The contrast between the two countries may be due to the fact that Benin has two rainy seasons. Consequently, the supply of food is more evenly distributed over the entire year.

Table 25. Storage Practices

	Benin			Malawi		
	Mean	S.d.	N	Mean	S.d.	N
% Traders that trade at residence	59%		661	35%		738
% Traders that store at residence	47%		659	54%		737
Storage capacity at residence (kgs)	3836	10497	658	5790	35873	733
% Traders that Store outside home	24%		649	39%		736
Storage capacity outside of residence (kgs)	3253	9715	649	6233	38269	728
% Traders with Access to collective storage	57%		658	32%		735
Cost of collective storage	0.26	0.28	139	3.12	8.11	153
% Traders that own residence	24%		660	75%		738
Value of residence	13689	43283	141	1039	3223	554
% Traders that owned residence a year ago	98%		155	96%		560

[a] US$ per ton per day. At the time of survey, exchange rates were 1 US $= CFA 600 and 1 US $ = MK 45.

Not all quantities purchased had been sold by the time of the survey. On average, surveyed traders had sold 85 to 90% of the quantities purchased by the time of the interview and had, on average, recouped the value of the purchased goods. The number of days elapsed since the last purchase varied significantly between the two countries, however: 22 days on average in Benin vs. 8 in Malawi (t value of 9.6). Medians were sizably lower -- 8 and 3 days respectively. Ninety percent of surveyed traders keep goods for less than a month. This suggests that storage is concentrated in the hands of a few traders. The majority of traders keep the products for a short period only, typically the time it takes to sell the batch of purchased goods.

A comparison of storage behavior across the various categories of assets reveals that there is little variation among asset groups. Indeed, in the case of human resources and social capital in Benin, traders in the lowest terciles have the highest days of storage. A possible explanation for this may be that the less endowed traders are typically retailers, whose main business is transforming the good from a larger lot size to smaller transaction units (eg., from 100 kg bags to under 1 kg traditional units). Thus, these traders require a longer period of time to complete a transaction according to the above definition, in which the total quantity purchased at one time is liquidated.

Table 26. Storage Days on Last Transaction by Firm Assets

	Benin					Malawi			
	Mean	S.d.	Median	N		Mean	S.d.	Median	N
Working Capital									
<$167	17.36	28.85	7.00	169	< $78	3.54	4.90	2.00	245
$167-$667	23.64	41.10	8.00	242	$78 - $244	7.08	12.09	3.00	245
>= $667	23.61	32.69	10.00	210	>= $244	13.29	21.69	6.00	246
Human Capital									
<=1 employee	24.43	40.32	8.00	349	0-1 employee	6.40	13.79	2.00	523
1 - 2 employees	13.35	19.62	7.00	147	>1 employee	12.03	17.81	6.00	204
> 2 employees	23.25	31.46	10.00	140					
Social Capital									
< 10	29.97	33.00	20.00	179	< 15	6.84	14.31	2.00	219
10 - 33	17.79	34.96	7.00	242	15 - 36	8.60	14.63	3.00	269
>= 33	19.18	35.69	7.00	219	>= 36	8.30	16.38	3.00	248
Gender									
Male	26.98	41.89	7.00	121	Male	9.02	15.82	3.00	468
Female	20.39	33.08	8.00	521	Female	6.15	13.73	2.00	268
Total	21.63	34.97	8.00	642	Total	7.98	15.15	3.00	736

5.4 Arbitrage over Transaction Size

Evidence from the last transaction reveals that, on average, the load is purchased from 5 different suppliers in Benin -- 15 in Malawi. The load is then sold to an average of 10 (Benin) to 50 (Malawi) different clients. In two third of the cases, the trader himself or herself traveled to the supply market or markets to oversee the purchase. In nearly all cases, the respondent supplies his or her own bags or containers at the time of purchase, i.e., agricultural products are transferred from the seller's to the buyer's bags.

The ratio of the number of clients to the number of suppliers indicates whether the trader is engaged in arbitrage across form: buying in large quantities from a few suppliers and selling in small quantities to a large number of buyers. The data reveal that traders in Malawi appear to be more engaged in transformation to retail quantities than traders in Benin. Viewed by asset category, traders with larger financial endowments carry out less arbitrage over transaction size than smaller traders. The same is true for traders with higher social capital. In terms of human capital, given that transforming goods from larger

to smaller transaction sizes requires human resources and capital, it appears that the lowest tercile in Benin are less involved in this activity than the other terciles.

Table 27. Change in Transaction Size[a] by Firm Assets

	Benin				Malawi		
Terciles	Mean	S.d.	N	Terciles	Mean	S.d..	N
Working capital							
<$167	8.03	9.51	72	< $78	25.62	34.90	245
$167-$667	4.10	7.63	113	$78 - $244	34.70	50.71	245
>= $667	2.80	5.28	125	>= $244	15.82	47.33	244
Human resources							
<1 employee	1.93	2.66	36	0 - 1 employee	28.03	43.52	523
1 - 2 employees	6.32	9.02	114	> 1 employee	19.24	50.29	202
> 2 employees	3.90	6.92	162	Total	25.58	45.64	725
Social Capital							
< 10	2.91	3.61	75	< 15	18.32	33.12	219
10 - 33	6.01	8.85	116	15 - 36	25.51	41.30	268
>= 33	4.18	7.75	124	>= 36	31.54	56.94	247
Gender							
Male	4.02	8.77	70	Male	23.31	43.49	466
Female	4.67	7.16	246	Female	29.02	48.47	268
Total	4.53	7.53	316	Total	25.39	45.43	734

[a] Ratio of number of clients to number of suppliers.

This can be explained in that the smallest trading firms may typically buy in retail quantities and sell in retail quantities. Finally, contrary to expectations, there appears to be relatively little distinction between male and female traders in this activity, suggesting that retail activity is not exclusive to women.

6. Market Performance

6.1 Margins

Gross Margins. The gross margin—the difference between the value of sales and purchases—varies significantly between the two countries: it is 2.4 times higher in Malawi than in Benin (t-value of 4.83). Median margins differ by the same order of magnitude. Since total sales do not differ markedly between the two countries, higher gross margins in Malawi must come from a larger difference between buying and selling price.

This is indeed the case: the ratio of selling price over buying price is 1.23 on average in Benin (median of 1.19) while it is 1.53 in Malawi (median of 1.40). In other words, the selling price is on average 23% above the buying price in Benin but 53% above in Malawi. This difference is quite significant, with a t-value of 11.7. This difference constitutes prima facie evidence that agricultural trade is in general less efficient in Malawi.

Margins also vary dramatically across traders. Some respondents appear to be making massive losses while others make windfall profits. Part of this variation undoubtedly comes from measurement error—since respondents do not hold accounts, annual sales and purchases must be extrapolated on the basis of a few key indicators. But the variation also suggests that unit margins are extremely volatile. Regarding their last transaction, close to 3% of surveyed traders report selling at or below the purchase price. At the other end of the spectrum, some traders report selling at close to 10 times the purchase price.

Table 28. Annual Gross Margins in Benin and Malawi

	Benin					
	Mean	S.d.	Min.	Max.	Median	N
Gross margin ratio on annual sales	22.10%	12.33%	-18.62%	77.46%	20.26%	595
Gross margin rate on last purchase	23.30%	23.72%	-64.29%	294.12%	18.52%	656
Annual gross margin ($)	3123.13	6662.62	-88.72	58721.07	814.46	595
Annual sales ($)	22872.40	114659.57	15.14	2615833.30	5322.92	607
Annual purchases ($)	18147.20	91508.16	11.51	2098750.00	4254.71	607
Sale price/purchase price	1.23	0.24	0.36	3.94	1.19	656
	Malawi					
	Mean	S.d.	Min.	Max.	Median	N
Gross margin ratio on annual sales	48.06%	35.26%	6.30%	204.62%	38.67%	588
Gross margin rate on last purchase	53.17%	60.85%	-87.43%	840.00%	39.53%	663
Annual gross margin ($)	7386.84	20452.87	51.85	251876.18	1732.29	588
Annual sales ($)	43611.15	182197.49	63.64	2848665.40	6728.57	598
Annual purchases ($)	32731.61	142789.69	35.45	2358541.20	4343.29	598
Sale price/purchase price	1.53	0.61	0.13	9.40	1.40	663

[a] At the time of survey, exchange rates were 1 US $= CFA 600 and 1 US $ = MK 45.

6.2 Costs

Variable marketing costs. Detailed information was collected on the various costs incurred in the process of assembling, transporting, and selling the last quantities purchased. In the remainder of this section, we refer to these costs as variable marketing costs because they vary with the amount purchased and the number of transactions processed by the trader over the year. Variable marketing costs represent $20 per ton in Benin and $31 in Malawi (t value of 8.43). Corresponding medians are $16 and $20. This compares to a median purchase price of $145 and $162 per ton in Benin and Malawi, respectively. Thus, for the median trader, variable marketing costs represent 11% to 13% of the purchase price.

Table 29. Variable Marketing Costs by Firm Assets (US$)[a]

		Benin				Malawi			
		$Costs/ton	% Relative costs [b]	N			$Costs/ton	% Relative costs [b]	N
Working capital									
<$167	Mean (S.d)	11 (15)	8 (13)	174	<$78	Mean (S.d)	30 (37)	16 (26)	200
$167-$667	Mean (S.d)	21 (20)	14 (14)	248	$78-$244	Mean (S.d)	32 (32)	15 (17)	220
>= $667	Mean (S.d)	25 (17)	18 (13)	216	>= $244	Mean (S.d)	30 (35)	20 (75)	232
Human resources									
<=1 employee	Mean (S.d)	16 (18)	12 (13)	358	0-1 employee	Mean (S.d)	31 (34)	14 (18)	449
1-2 employees	Mean (S.d)	22 (18)	14 (15)	152	>1 employees	Mean (S.d)	30 (38)	24 (84)	187
>2 employees	Mean (S.d)	24 (21)	16 (14)	144					
Social capital									
< 10	Mean (S.d)	16 (17)	13 (15)	185	< 15	Mean (S.d)	26 (33)	18 (78)	191
10 - 33	Mean (S.d)	18 (17)	12 (12)	252	15-36	Mean (S.d)	32 (35)	16 (26)	232
>= 33	Mean (S.d)	24 (22)	15 (15)	222	>= 36	Mean (S.d)	32 (36)	17 (27)	222
Gender									
Male	Mean (S.d)	21 (14)	15 (11)	127	Male	Mean (S.d)	29 (33)	19 (58)	428
Female	Mean (S.d)	19 (20)	13 (15)	534	Female	Mean (S.d)	34 (37)	12 (16)	217
Total	Mean (S.d)	20 (19)	13 (14)	661		Mean (S.d)	31 (35)	17 (48)	645
	Median	16	10			Median	20	9	

[a] At the time of survey, exchange rates used are 1 US $= CFA 600 and 1 US $ = MK 45.
[b] Relative marketing costs are calculated as the ratio of marketing costs to purchase price.

In Benin, absolute marketing costs per ton increase with traders' assets, revealing that as the scale of operations rise, so too do the amount of services provided or commercial activities such as transport and storage. Similarly, relative marketing costs also rise with asset base, suggesting that more endowed traders

are more competitive in that their net margins (holding the purchase price constant across terciles) will be lower, as will explored in the following section. Marketing costs generally appear higher in Malawi and it is less clear that costs rise with increased assets, particularly in relative terms. In both countries, as expected, male traders incur higher absolute and relative marketing costs.

Decomposition of Marketing Costs. We now turn to the decomposition of variable marketing costs. Respondents were asked to identify, for their last completed transaction, all the costs incurred between the purchase and the sale of the transacted goods. Thus, up to 19 types of costs were identified. For the purposes of analysis, these costs are classified into 10 categories: the cost of the empty sack, handling costs (the sum of bagging and sewing, loading at place of purchase, and off-loading at destination), the cost of transport itself, other transport-related costs such as payments at road stops and to transport brokers, storage costs (if paid per bag), the cost of telephone or radio communication related to the particular transaction, commissions paid to purchase and sales intermediaries and other tips, personal travel costs (if the trader accompanies the shipment), municipal and market taxes (if paid per bag or transaction), and other non-specific costs.

Transport represents by far the largest component of variable cost: 45% in Benin and 40% in Malawi. If we add other transport-related costs, we get a transport share of 49% in Benin. This confirms other empirical findings that transport represents the lion's share of marketing costs in sub-Saharan Africa (Badiane et al, 1997; Gabre-Madhin, 1991). The second most important variable cost component is the travel cost incurred by the trader. This cost can be interpreted as the cost of search for partners and information, since traders tend to accompany the shipment themselves rather than conducting sales and purchases by telephone or long-distance order. This cost alone represents 11% of total marketing costs in Benin and 23% in Malawi. Together, transport of goods and of the trader represent the most significant share, 60% in Benin and 63% in Malawi, of the financial outlays associated with an individual transaction.

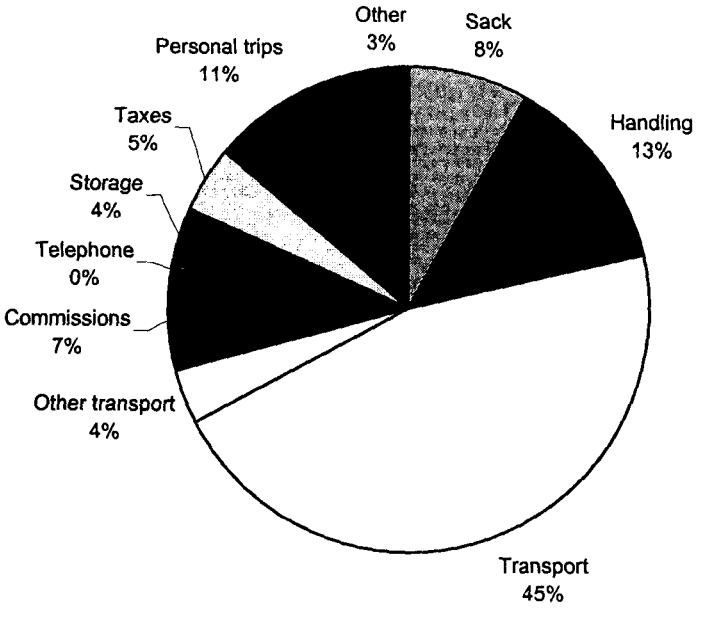
The cost of bags and of handling represents important categories of variable costs. The value of bags varies around $4 to $6 per ton. Bags are recycled and re-used an average of 5 (Benin) to 9 times (Malawi),

which brings down bagging costs. The pro-rated cost of bags and the labor cost of bagging together account for 7% to 10% of total variable costs. This cost can also be viewed as directly related to the search for information. Traders indicate that re-sacking of the goods is customary at each transfer of ownership in order to identify and ascertain that goods conform to the stated quality and quantity. Moreover, the sacks used by traders are themselves non-standardized and subject to moral hazard. The incidence and significance of the cost of bagging, like that of personal travel by the trader, suggests the presence of market failure in the facilitation of market exchange between buyers and sellers. Similar results were obtained by Gabre-Madhin (1998) in Ethiopian grain markets, where re-sacking is also customary, resulting in very high handling costs of 25%. In Benin and Malawi, handling costs represent 12 to 13% of total costs. This lack of standardized sacks and of grades and standards for traded products leads to the need to off-load and transfer goods to different bags at each assembly point in the marketing chain, resulting in significant losses in economic welfare.

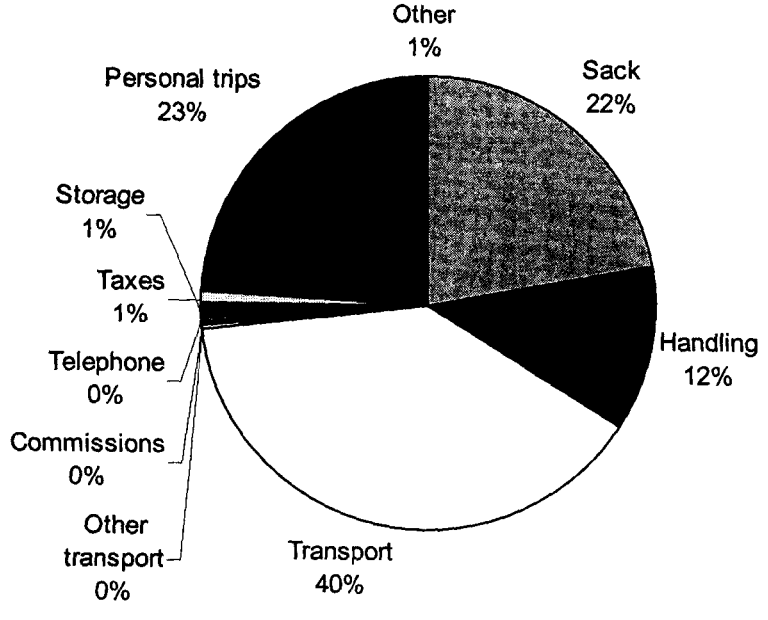
Commissions and tips account for 8% of variable costs in Benin but are negligible in Malawi. This reflects a major difference in the role of intermediaries between the two countries. As expected, short-term storage is less than 4% in both countries, confirming the lack of storage noted above. Market taxes assessed on quantities traded account for a very small fraction of variable costs: less than 3% of variable costs in both countries. With the exception of a very small number of traders, the use of telephone or other form of telecommunication is virtually non-existent in both countries, confirming the inability of traders to reliably conduct transactions without visually inspecting goods and physically being present for the transfer of ownership. This signals not only the lack of sophistication of agricultural trading in both countries but also the significant constraints imposed by missing markets for market information and product certification.

Figure 2a-b. The Composition of Marketing Costs in Benin and Malawi

a. Benin (N=609)



b. Malawi (N=622):



Operating costs. Data were also collected on fixed operating costs. Average operating costs amount to round $550 per year in Benin vs. $190 in Malawi. Survey results show that, in Benin, fixed operating costs are dominated by vehicle maintenance and insurance. These costs, however, are incurred only by a very small fraction of the trader population, those with vehicles. The next most important fixed cost category is storage and pest control. These costs account for 21% (Malawi) to 34% (Benin) of fixed operating costs, but they affect only a fourth to a third of surveyed traders; others stock at their residence or at their own storage facility.

Taxes and fees amount to 44% of operating costs in Malawi, but as little as 5% in Benin. Even in Malawi, however, the burden of taxation remains small: $84 a year, compared to an average annual turnover of around $43000. While very few traders pay income tax, market fees are paid by most of them—50% in Benin, 80% in Malawi. For small traders, market fees are the only form of operating cost they incur. Since market fees do not increase proportionally with trade volume, it affects primarily small to medium-size traders; it is a regressive tax. Given that transport represents such a large component of traders' costs, we speculate that traders probably pay more taxes through gasoline taxes than through all other forms of taxation.

Other categories of operating costs such as wages and losses due to theft make small contributions to costs. Total wages represent an extra cost of $50 per year in Benin and $110 in Malawi. This amount is very small because so few traders employ paid workers and when they do, they pay them very little. Very few traders borrow money. When they do, they borrow for such short periods that interest charges are, on average, negligible. Losses due to theft average $22 a year in both countries.

We also collected detailed information on commissions paid to various intermediaries. These costs are in principle included in variable costs, but we also collected the information separately. We again see that commissions are much more frequent in Benin than in Malawi. This is particularly true for buying agents and consignment agents. Benin traders spend on average four times more on commissions than Malawian traders. To verify the information on the costs incurred for personal travel, the information was

collected separately as well. Results confirm that personal travel represents a sizeable share of total costs: 17 to 18% of total variable costs in both countries.

To summarize, the structure of operating costs is dominated by transport costs. What is unexpected is the large share of this transport cost covers the travel of the trader himself or herself. The need for thousands of traders to travel to the sale market in person—instead of placing an order over the phone -- undoubtedly contributes to higher trading costs.

Table 30. Annual Operating Costs (US$) of Traders in Benin and Malawi [a]

	Benin					
	Mean	S.d.	Min.	Max.	Median	N
Fixed costs:						
Rental of shop/storage	74	472	0	10342	0	663
Pest control	116	1363	0	30417	0	663
Electricity	1	10	0	167	0	663
Telephone	19	268	0	6667	0	663
Maintenance of vehicles	292	3425	0	83333	0	663
Vehicle insurance	24	150	0	2150	0	663
Fees and market taxes	30	155	0	2129	0	663
Income tax on trading business	1	9	0	183	0	663
Total operating costs	557	3881	0	85279	13	663
Commissions to agents:						
Buying agents	254	903	0	12167	0	624
Brokers	71	458	0	6083	0	653
Consignment agents	87	255	0	2129	0	653
Travel costs:						
To purchase markets	297	1421	0	30720	142	537
To sales markets	177	805	0	13905	30	414
Loss due to theft	22	140	0	2500	0	659
Total wage bill	51	390	0	6083	0	629

	Malawi					
	Mean	S.d.	Min.	Max.	Median	N
Fixed costs:						
Rental of shop/storage	19	102	0	2489	0	738
Pest control	21	230	0	4148	0	737
Electricity	10	129	0	3318	0	737
Telephone	5	55	0	1227	0	737
Maintenance of vehicles	47	430	0	8182	0	737
Vehicle insurance	5	76	0	1591	0	737
Fees and market taxes	69	336	0	8295	50	736
Income tax on trading business	15	337	0	9091	0	733
Total operating costs	188	806	0	11818	66	730
Commissions to agents:						
Buying agents	45	384	0	8295	0	735
Brokers	52	433	0	8295	0	735
Consignment agents	2	41	0	1091	0	734
Travel costs:						
To purchase markets	443	1348	0	23636	213	564
To sales markets	1219	4843	0	47273	65	219
Loss due to theft	22	121	0	2273	0	727
Total wage bill	111	853	0	20739	0	726

[a] At the time of survey, exchange rates used are 1 US $= CFA 600 and 1 US $ = MK 45.

Table 31. Traders' Cost Structure by Working Capital in Benin and Malawi

		Benin					Malawi			
Tercile		Total costs	Marketing costs	Fixed operating costs	Variable operating costs	Tercile	Total costs	Marketing costs	Fixed operating costs	Variable operating costs
<$167	Mean	427	393	30	3	< $78	658	537	105	16
	S.d.	1001	990	102	10		1826	1718	539	76
	Median	58	22	8	0		206	119	65	0
	N	154	159	174	168		175	185	243	232
	Mean	1533	1380	113	25		904	736	77	66
$167-$667	S.d.	3981	3664	782	80	$78 - $244	1408	1294	58	311
	Median	341	311	9	0		419	300	65	0
	N	213	226	249	235		183	193	238	240
>= $667	Mean	6947	6731	7149	238	>= $244	10366	25152	116	402
	S.d.	15152	31485	77453	778		52451	207759	269	1503
	Median	2714	2015	81	43		1582	1460	65	80
	N	173	201	216	186		171	197	215	238
Total	Mean	2952	2948	2469	86	Total	3881	9037	99	162
	S.d.	9355	18761	45089	451		30128	121967	353	905
	Median	515	457	14	0		503	390	65	0
	N	540	586	639	589		529	575	696	710

6.3 Net Marketing Margins and Annual Profits

Net Marketing Margins on Last Transaction. For the last transaction, net margins are obtained by subtracting total variable marketing cost from the gross marketing margin, which is equal to the price spread between purchase and sales price. Net margins in terms of dollars per ton are considerably higher (8.4 times) in Malawi, with a sample average of $194/ton compared to $23 in Benin. This supports our earlier findings that competition is greater in Benin. Net margins appear to vary significantly in both countries, with no discernible effect of firm assets or gender on net margin levels in either country.

Further, it is striking that 23% of traders in Benin and 8% in Malawi report a negative net margin. This is in part due to negative gross margins, where the price spread is negative, for 3% of the sample in Benin. However, beyond the relative small frequency of negative price spreads, it appears that a large proportion of traders, particularly in Benin, did not cover their costs in the last transaction. In part, this

finding indicates the presence of competition, but it also suggests possible measurement error of the variable marketing costs. In particular, sources of error are the cost of personal travel, which covers the entire shipment. Personal travel costs are subject to economies of scale as well as of scope. This is because traders may take advantage of a trip to take care of personal business or to engage in other, more profitable, commercial activities, which are not captured in our measure of profit.

Table 32. Net Margins ($/ton) by Firm Assets in Benin and Malawi

	Benin						Malawi				
Terciles	Mean	S.d.	Median	Margin<0 (%)	N	Terciles	Mean	S.d.	Median	Margin<0 (%)	N
Working capital											
<$167	27.44	47.52	19.17	13.2	171	< $78	82.58	129.18	47.17	6.1	194
$167-$667	18.60	46.84	11.29	24.9	247	$78 - $244	111.85	133.95	68.22	6.1	215
>= $667	24.56	141.75	10.42	30.6	215	>= $244	133.40	270.66	35.70	11.7	225
Human resources											
<=1 employee	21.00	50.82	16.24	22.0	356	<=1employee	100.89	134.49	55.52	6.5	441
1-2 employees	21.40	48.31	11.88	27.6	149	>1 employee	135.98	289.60	28.85	11.3	184
>2 employees	30.90	168.29	9.65	23.6	143						
Social Capital											
< 10	31.07	146.34	14.83	19.5	184	<15	108.05	205.56	44.44	9.1	189
10-33	24.91	50.87	14.28	22.1	249	15-36	109.90	198.87	46.00	7.4	227
>=33	14.95	56.89	10.86	28.4	220	>= 36	113.38	177.73	55.38	7.7	218
Gender											
Male	32.56	181.61	7.54	28.3	127	Male	109.01	216.59	42.92	9.4	424
Female	20.99	46.25	14.30	22.2	528	Female	113.65	136.47	66.00	5.6	210
Total	23.24	90.00	13.13	23.4	655	**Total**	110.55	193.66	47.39	8.0	634

Annual Profits. We construct estimates of profits from trading. Profit is computed as the annual sales minus annual purchases minus annualized variable costs minus annual wages paid minus annual operating costs. In case agricultural trade only represents part of the revenue of the surveyed trader, annual purchases and sales were inflated accordingly. Traders who derive less than 10% of their annual revenue from agricultural trader are omitted. The resulting profit represents payments to self-provided

factors of production such as working capital, owned storage facilities, equipment, and vehicles, and unpaid labor by the entrepreneur and family helpers.

Computed profits suffer from severe measurement error. This is because they are obtained by subtracting poorly measured costs from poorly measured revenues. Measurement errors therefore tend to compound themselves and individual measures of profit should be regarded with caution. Average profits, however, should provide a reasonable approximation of what profits from trading must look like in the two surveyed countries.

After eliminating the upper and lower one percent of the distribution, we find that 21% of surveyed traders do not cover their operations and wage costs out of annual sales (28% in Benin, 15% in Malawi). Annual profits also vary dramatically across countries, with the median profit in Malawi -- $1003 -- nearly ten times higher than in Benin— $119. For most Benin respondents, trade provides but a small return on entrepreneurship and capital. This suggests that competition is fierce in Benin, less so in Malawi.

Results show that traders' profits are non-negligible: $1340 on average in Benin, $6140 in Malawi. The difference between the two countries is significant (t value of 6.03). Median profits, however, are much lower: $120 in Benin, $1140 in Malawi. This corresponds to an average profit rate on turnover of 6% in Benin and 14% in Malawi. Profits amount to 32% of the gross margin (difference between buying price and selling price) in Benin; the corresponding figure for Malawi is 57%[2]. Median profit rates are 37% and 64%, respectively. Since, if anything, Malawian traders have less equipment and working capital and use less family labor than their Benin counterparts, higher profit rates cannot be explained as higher payment to self-provided factors of production. It therefore appears that Malawian traders are less competitive.

[2] To minimize bias, this figure is obtained after eliminating traders who do not derive all their revenue from agricultural trade.

Table 33. Annualized Profits in Benin and Malawi[a]

	Benin					
	Mean	S.d.	Min.	Max.	Median	N
Profit rate on annual sales	3.9%	18.9%	-114.8%	57.7%	5.5%	559
Annual profit ($) [b]	1338.81	5537.11	-9163.71	68593.59	119.05	559
	Malawi					
	Mean	S.d.	Min.	Max.	Median	N
Profit rate on annual sales	14.1%	18.2%	-80.3%	57.1%	14.9%	549
Annual profit ($) [b]	6140.68	17989.06	-4173.45	172689.50	1142.11	545

[a] Profit = Gross margin – variable costs – operating costs - wage bill.
[b] At the time of survey, exchange rates were 1 US $= CFA 600 and 1 US $ = MK 45.

These average profit rates mask a great deal of variation across traders. A large proportion of surveyed traders -- 20% -- appear to be making losses. On the other hand, some traders appear to be making astronomical profits. It is unclear how much of this variation is due to measurement error, but the extent of it suggests that profits from trade are likely to be very variable. Agricultural trade is a risky venture.

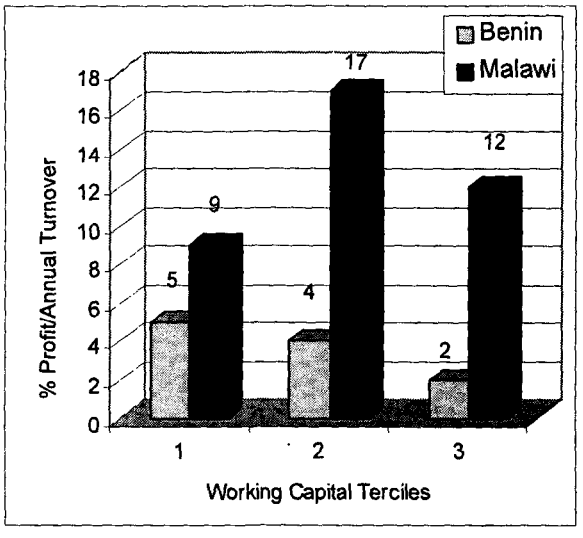
Further analysis of absolute levels of annual profits broken down by firm assets and gender provides evidence of significant returns to working capital as well as to social capital in both countries. Median profits nearly double between working capital terciles in Benin and nearly triple in Malawi. Returns to social capital are also high in both countries, though somewhat lower than that of financial capital. In contrast to Malawi, profits are nearly half for traders in the middle tercile compared to the bottom tercile. This suggests that the one-person enterprises, typically of women retailers, are more profitable than the slightly larger firms. As firms grow beyond the threshold level of 2 employees, profitability then increases. Finally, as expected, male traders have considerably higher profit levels than women in both countries.

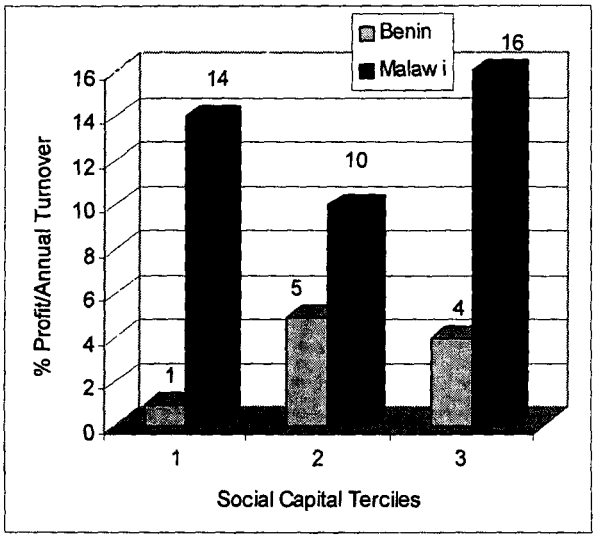
The figures below confirm that across countries for each type of firm asset and gender, traders in Malawi have considerably higher profit rates, defined as the ratio of annual profits to the value of annual sales, than their counterparts in Benin. What is also revealing is that, unlike the case of absolute profit levels, there is no clear pattern of the impact of assets on profit rates.

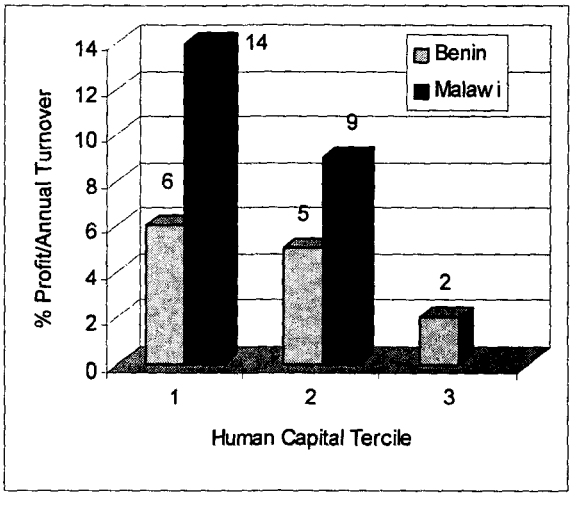
Table 34. Annual Profits by Firm Assets in Benin and Malawi ($)

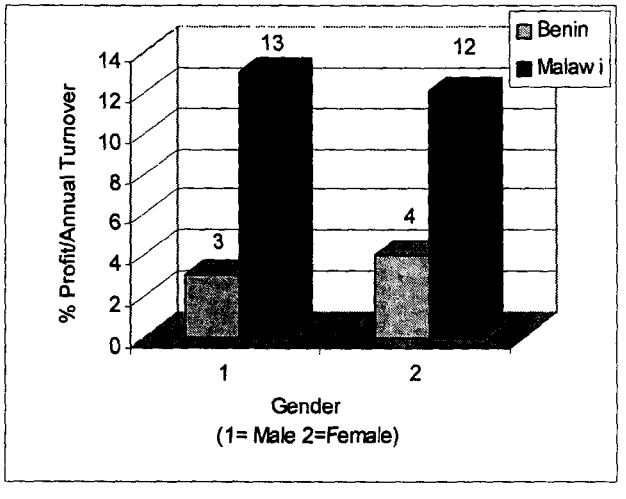
	Benin					Malawi			
	Mean	S.d.	Median	N		Mean	S.d.	Median	N
Working Capital									
<$167	520.62	1875.13	79.20	145	< $78	737.24	1956.37	297.89	173
$167-$667	888.82	2706.06	133.86	210	$78 - $244	1994.70	4692.99	865.52	182
>= $667	2737.89	10465.61	210.42	162	>= $244	9069.13	67011.87	2690.47	170
Human resources									
<1 employee	3213.70	11315.70	142.51	58	0-1 employee	2815.60	10364.75	650.58	389
1-2 employees	778.78	4097.84	73.74	262	>1 employee	6890.15	73390.51	2086.36	136
>2 employees	1500.48	6200.78	223.12	215					
Social capital									
< 10	81.54	1807.44	72.68	146	< 15	2698.08	7433.28	466.34	155
10 – 33	1053.35	3794.99	100.17	219	15 - 36	4540.01	59066.08	767.73	194
>= 33	2781.78	9693.72	273.96	170	>= 36	4166.85	22465.76	1428.90	176
Gender									
Male	3929.95	12442.11	291.25	103	Male	5002.94	47520.49	1252.62	339
Female	712.65	2866.97	94.87	433	Female	1808.24	5690.83	425.17	186
Total	1330.90	6145.03	102.83	536	Total	3871.10	38345.75	884.50	525

Figure 3a-d Annual Profit Rates by Firm Assets in Benin and Malawi [a]









[a] Profit rate=% annual profit/ value of sales.

7. CONCLUSIONS AND POLICY OPTIONS

We have given a detailed description of how agricultural traders operate in Benin and Malawi, two countries fairly representative of western and eastern and southern Africa. Many of the features we have documented were well-known—small size of businesses, lack of equipment, rudimentary business practices, and the dominant role of transport costs. Other features were less well known, such as the importance of personal travel, bagging practices, the short distances over which most traders operate, and the incidence of theft and breach of contract.

We were also able to dispel some myths. For instance we documented the absence of speculative, inter-seasonal storage for the overwhelming majority of traders, and the relatively low returns to storage in general. We showed that advances from traders to farmers are of short duration—one to two weeks. Their main purpose is not to exploit farmers' need for cash in order to finance agricultural production, but rather a means for traders to secure future deliveries.

The picture that emerges from this analysis is one that is dominated by transport—for goods and for traders. Because trading enterprises are small, the quantities they can gather from any one market are limited by what the trader can reliable locate, finance, and inspect. As a result, transport takes place in small vehicles—pick-up trucks for the most part. An inordinate amount of personal travel takes place as well, since traders must inspect the goods they purchase and payment is normally in cash upon delivery.

Surveyed traders appear to work effectively under the constraints they face, which are many—e.g., limited external finance, no brand names and trademarks, no certified quality, no organized commodity exchange, extremely decentralized production and consumption. They rely on networks to share information and discourage breach of contract and are able to perform an essential trading function in a flexible and expeditious manner. But the end result nevertheless is a costly system that provides a limited service to consumers and producers.

Another feature worth emphasizing is the simplicity of the equipment used by most traders. Few traders own scales or processing equipment. Storage often takes place at home. While a small minority owns

vehicles, most traders rely on external providers to transport their goods and themselves. Agricultural goods are mostly transported in small pick-up trucks. These were shown to have higher costs. Most capital is tied up in inventories and, for some traders, in short-term credit to customers. Reliance on external finance is extremely limited. The only form of borrowing that is common in both countries is loans from friends and relatives to deal with short-term emergencies. Working capital, however, is not sufficient for commercial success if it is not combined with business contacts.

The modernization of agricultural trade requires that original solutions be found to the genuine problems that traders face. The only 'modern' technologies Benin and Malawian traders seem to be using at this point are motorized transport and pest control. Telephones and banks are ignored. Brand recognition, grading, and quality certification are non-existent. Brokers and agents are not organized in commodity exchanges. Quantities are not pooled for transport and storage so as to achieve returns to scale. Inter-seasonal and inter-regional arbitrage is outside the purview of most traders, who prefer to operate in a small territory on a day-by-day basis. By extension, an entire continent is fed using a rudimentary, costly, and risky set-up.

The information presented here provides some important insights as to how agricultural trade can be improved. Policy interventions can be conceived in four main areas: (i) increasing traders' asset base; (ii) reducing transaction risk; (iii) promoting more sophisticated business practices; and, (iv) reducing physical marketing costs.

Increasing Traders' Assets

One possible approach to reduce marketing costs and improve agricultural markets is to help traders invest in modern equipment. We were surprised by the virtual absence of scales and processing equipment (such as grain dryers and grading machines) and reliance on small-scale home storage. One possible interpretation is that traders do not invest in such equipment because it is not profitable. This may be true for small traders but is unlikely to be correct for large trading operations. We believe that these avenues should

be explored. One should keep in mind, however, that as large traders get better equipped and hopefully more efficient, they should drive out some of the smaller traders, who predominantly tend to be women.

Improving access to external finance should also be attempted. It is shocking, for instance, to note that large traders do not even have an overdraft facility. For certain traders – those with adequate experience and good business contacts – access to more finance would undeniably help them grow and prosper. But we are not convinced that increasing widespread access to external finance would improve the efficiency of agricultural markets in general: easier finance may help some traders increase their market share and eliminate competitors, but need not result in lower prices for consumers or higher prices for producers. The reason is that business practices remain quite rudimentary, making it difficult if not impossible for trading operations to grow beyond a certain size and remain competitive.

Our results suggest that larger traders have higher margins. There are at least three possible explanations for this finding. First, it is possible that larger traders conduct more profitable operations, involving more risky and more capital intensive activities such as storage and long-distance transport. If this interpretation is correct, larger traders are more profitable on average because they capture returns to risk taking and scarce capital. A second possible interpretation is that agricultural trade, as it is currently practiced, is characterized by decreasing returns to scale: large traders have higher margins because they are inefficiently large. Normally, competition should weed out inefficient firms and align margins. But the forces of competition might be hindered by privilege and political clientelism.

Thirdly, large firms might have higher margins because they exert market power. The presence of a large number of small traders would normally be sufficient to discipline large traders. But the crude transaction practices of the competitive fringe compare to the slightly more efficient practices of large traders might result in increasing returns to scale. If this interpretation is correct, the fact that large firms with high margins coexist with small firms with low margins suggests that large firms act monopolistically: if they wanted, they could eliminate the competitive fringe by reducing their price. The fact that they do not is evidence of insufficient competition among large firms.

In this respect the comparison between Benin and Malawi is instructive. Gross margins and unit profits are noticeably lower in Benin than in Malawi. At the same time there appears to be more competition and smaller trading firms in Benin. At prima facie, this would suggest that more competition favors smaller margins. Population density is also much higher in Benin and crop production is spread more evenly over the year. This implies more geographical concentration in traders' operations, and less need for storage. Together, these features could explain the lower costs of intermediation in Benin. These issues will be the object of further research.

Reducing Transaction Risk

Our work shows that rudimentary business practices can largely be blamed on transaction risk. Payment takes place at delivery, a practice that precludes invoicing and payment by check and complicates accounting. Goods have to be inspected upon delivery because the supplier is not trusted to provide a reliable account of the quality and quantity sold. Grain has to be physically moved from one bag to another at each sale transaction. This facilitates inspection but raises costs and slows down trade. Business networks have developed as a partial palliative to these problems, but they are insufficient to eliminate them. Besides, networks have other problems (Fafchamps 1999).

It is not entirely clear how in practice transaction risk can be reduced. The court system by itself is unlikely to suffice because agricultural market transactions are seldom large enough to go to court, assuming that breach of contract could be demonstrated and that the defendant has assets that can be foreclosed upon. One institutional innovation that could potentially reduce transaction risk would be for markets authorities to take a pro-active stance. Membership in traders association could in principle be used as a guarantee of good conduct. Traders shown to breach contracts would be ousted from the association. The existence of traders associations in Benin suggests that such approach might be possible by strengthening and advising existing associations.

Traders associations could also intervene in grading and quality certification. An association equipped with a grain dryer and simple grading equipment could bag and certify its products in a manner

that is difficult to falsify. Reassured about the quality of the goods they purchase, buyers may be more willing to place orders by phone.

Another approach would focus on agents and brokers who could, in principle, serve as essential link between unknown buyer and seller. Gabre-Madhin (1998) has documented how this system works in the case of the Ethiopian grain market. A core of experienced brokers would be required before a commodity exchange could be set up. The existence of such an exchange would in turn facilitate the circulation of information by publicizing current and future grain prices. Albeit the creation ad nihilo of commodity exchanges in Benin and Malawi is not something we recommend for the near future, assisting the emergence of grain brokers coupled with grading and quality certification by traders' associations would lay the foundation for a commodity exchange in the more distant future.

Promoting Sound Business Practices

Benin and Malawian traders manage to feed the population of their respective country by collecting and distributing food among millions of producers and consumers. They do so in difficult circumstances and demonstrate great ingenuity. Perhaps even more remarkably, many of them appear to be making a living from their trading activity. All this notwithstanding, business practices appear inefficient. As argued earlier, exchange takes a cumbersome form. This enables a myriad of small traders to compete with larger ones. But cumbersome practices increase the costs of the entire marketing system.

The question is how to capture increasing returns to scale from modern trading practices. Put differently, how can we enable large traders to adopt modern transaction methods so that they can reduce their costs and drive small traders out. One possibility is to favor large traders directly, for instance through credit programs and restrictions to entry. These policies have been tried elsewhere and have generally failed to induce large traders to modernize and become more efficient. Another approach is to support the 'modernization' of trading practices irrespective of firm size. If modern practices are, as expected, efficiency enhancing, those traders that begin using them should grow and eventually displace others. One example of such approach would be to upgrade markets by installing telephones and faxes, providing cheap good

quality sacks, and facilitating loading and off-loading. Simple processing equipment could also made available to traders, in exchange for a user fee. It is likely that some experimentation is required to identify suitable innovations – and the right sequence of innovations. A pilot project on market support would be the ideal vehicle for such experimentation.

Reducing Physical Marketing Costs

Physical marketing costs constitute the bulk of traders' costs. Although many of these physical costs are ultimately the result of transactions costs (e.g., the need for traders to travel to the point of purchase and sale), there is ample scope for lowering marketing costs by reducing transport costs. Various policies could be used to address the high cost of transport. Direct measures, such as reducing gasoline taxes, would undoubtedly have an effect, at the expense of much needed government revenues. Measures to improve the maintenance of rural feeder roads are urgently needed. Devolving maintenance to local administration is an option to study. Its corollary is that local administration must be granted taxing authority, e.g., the right to set up toll roads or other forms of road taxation.

Another innovation worth exploring is the expansion of transport brokerage services. We have shown that transport costs could be reduced by using larger trucks. This is currently difficult because of the small size and decentralized nature of traders' operations. Transport brokers would take possession of cargo, rent out space on large trucks, and deliver to traders in their sales market. Our observations suggest that such practices are already present, but not sufficiently widespread. We suspect that the fear of breach of contract is a strong obstacle to the development of these practices. Better trust between traders and transport brokers should greatly simplify the organization of transport, thereby reducing costs.

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